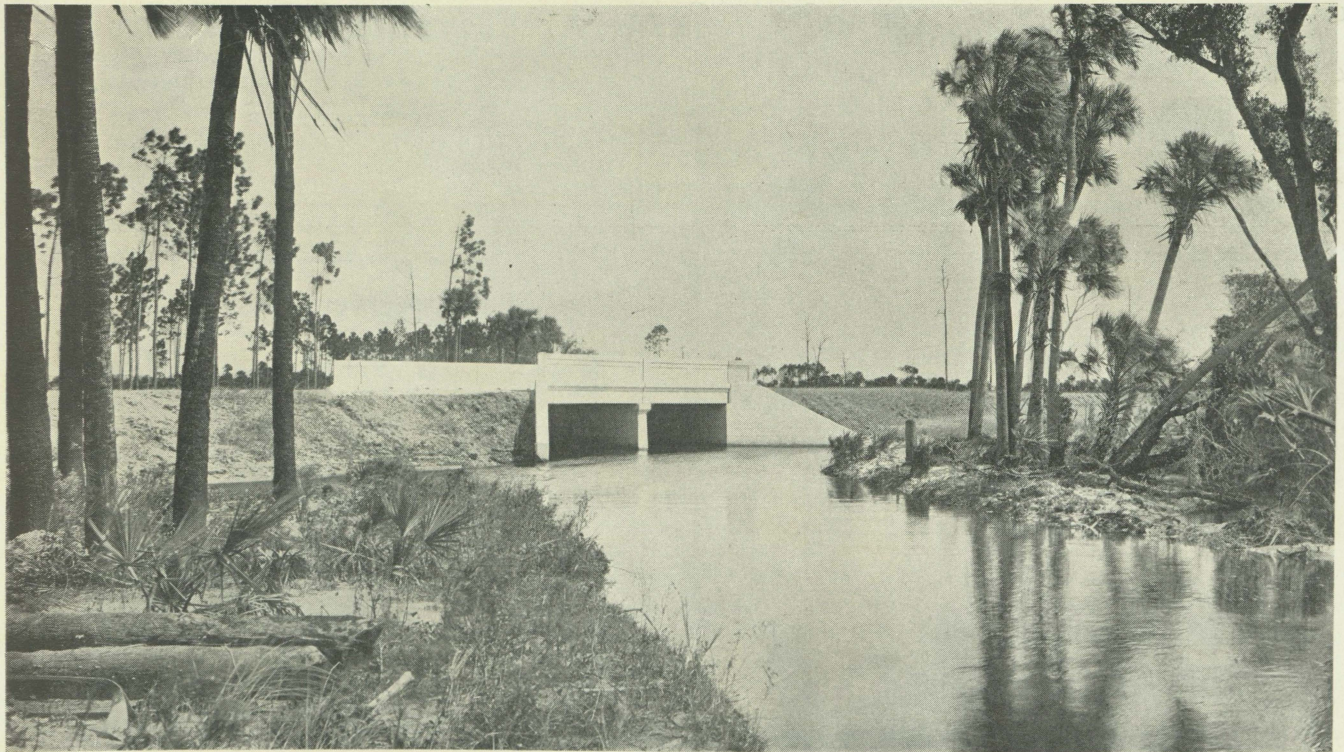


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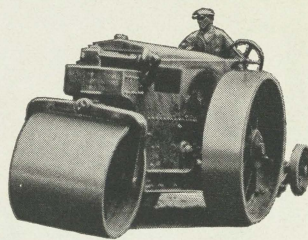


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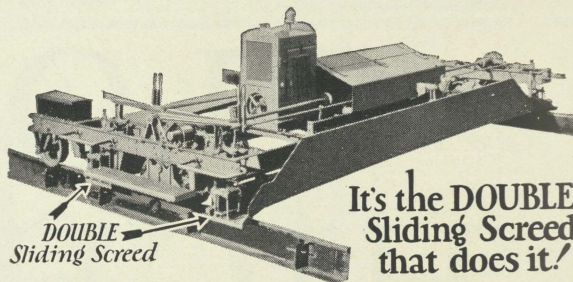
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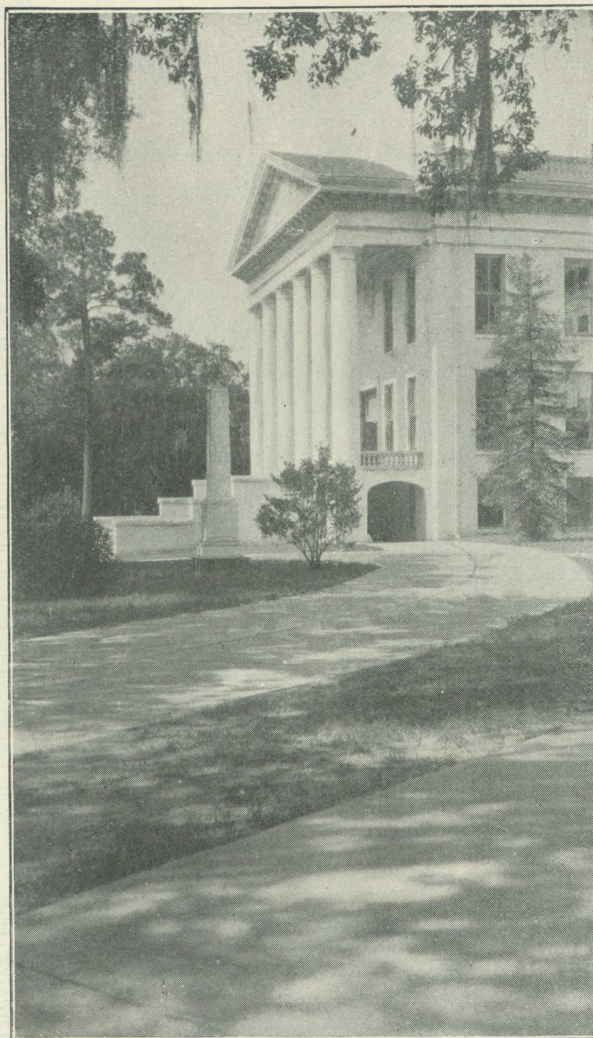
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H I G H W A Y S

DECEMBER
1928

Transactions at a Special Meeting of State Road Department of Florida Held in Tallahassee, December 12, 1928

PURSUANT to notice duly and legally given by the chairman, a special meeting of the State Road Department was held in Tallahassee on the 12th day of December, A. D. 1928. The following members were present: F. A. Hathaway, chairman; E. P. Green, W. J. Hillman, J. Harvey Bayliss and I. E. Schilling. J. L. Cresap, State Highway Engineer; W. P. Bevis, secretary, and H. J. Morrison, Federal Highway Engineer, were also in attendance.

Installation of Traffic Signs

Senator E. W. Waybright, representing Scenic Safety Signs, Inc., of Tampa, again submitted to the Department the proposal of his clients to install highway reflector signs at turns, curves and other dangerous places on state highways, if the Department will permit said firm to place thereon a small amount of advertising, consisting principally of the name of the advertiser and his or its place of business. No action was taken on the matter.

Installation of Traffic Signs

On motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Resolved, That the chairman be and he is hereby authorized, without further reference to this Department, to advertise for a sufficient number of signs to adequately mark the state highways whenever in his judgment the same may be necessary.

St. Johns County—Road 47

Senator W. A. MacWilliams presented to the Department a resolution from the County of St. Johns, requesting that the State Road Department take over for maintenance State Road 47 in said county, whereupon, upon motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Resolved, That, effective January 1, 1929, this Department shall take over for maintenance State Road 47 within the County of St. Johns; provided, however, it shall be found upon investigation by the engineer that the said road has been in all respects constructed in accordance with the Standard Specifications of the Department.

Jefferson County—State Road 11

On motion of Mr. Schilling, seconded by Mr. Bay-

liss, the following resolution was unanimously adopted:

Whereas, By statute the road from the Georgia-Florida line at a point north of Monticello to Capps, in Jefferson county, on State Highway No. 19, has been designated a state highway as No. 11; and

Whereas, So much of said Road No. 11 as lies north of Monticello has been put by statute in the secondary preferential class; and

Whereas, The entire Road No. 11 from the Georgia line to Capps is a most valuable inlet into Florida, especially to the west coast of Florida, and a direct and extremely short feeder from the city of Atlanta, Georgia, a point of concentration of southern travel, through Georgia's Road No. 3 to Florida's Road No. 1 at Monticello and Florida's No. 19 at Capps; and

Whereas, The County of Jefferson, in which county the entire Road No. 11 runs, appreciating the importance of this road, has donated \$127,500.00 in bonds to aid in the construction and completion of said Road No. 11 as a completely paved highway, on condition that said road be rushed to completion as such as soon as possible under the emergency and discretionary powers of the Road Department, and said bonds have been accepted and used by the Department under such conditions; and

Whereas, These bonds now constitute a debt upon the County of Jefferson on which it is paying interest, without the enjoyment or full benefit to said county and other sections of the state, contemplated in donating said bonds, of a full and completely paved road; and

Whereas, The grading of said road has been completed and said Road No. 11 has been taken over by the state and is now practically in condition to be paved; and

Whereas, The said Road Department, appreciating the great importance of Road 11 as a part of the State Highway system to all parts of the state, and the Department's moral obligation to the County of Jefferson to hasten the completion of this road as a paved highway, regrets that it has been unable to reach the letting of a contract for the paving of said road during the present year. Therefore, be it

Resolved, That the State Road Department hereby declares the paving of said Road 11 a matter of extreme emergency, that the Department is under moral obligation to the County of Jefferson in consideration of the premises, to rush to completion the paving of Road No. 11; and that it is the sense of the Department that contracts to that effect should be let at as early a date as possible in the coming year.

LEON COUNTY—STATE ROAD NO. 10 \$100,000.00 of Bonds

On motion of Mr. Green, seconded by Mr. Bayliss, the following resolution was unanimously adopted:

Whereas, This Department did, on November 10th, A. D. 1928, pursuant to notice duly advertised in Florida Times-Union, a newspaper published in the city of Jacksonville and the State of Florida, and in the Daily Bond Buyer, a newspaper published in the city of New York, receive sealed proposals for the purchase of \$100,000.00 5% road bonds of Leon county, Florida, series A, B, C, D and E, dated July 1, 1925, and with maturities as follows, to-wit:

Series A

\$2000.00	July 1, 1931
2000.00	July 1, 1932
2000.00	July 1, 1933
1000.00	July 1, 1934
1000.00	July 1, 1935

Series B

\$4000.00	July 1, 1936
4000.00	July 1, 1937
2000.00	July 1, 1938
2000.00	July 1, 1939
2000.00	July 1, 1940

Series C

\$4000.00	July 1, 1941
4000.00	July 1, 1942
4000.00	July 1, 1943
4000.00	July 1, 1944
4000.00	July 1, 1945

Series D

\$6000.00	July 1, 1946
5000.00	July 1, 1947
5000.00	July 1, 1948
5000.00	July 1, 1949
5000.00	July 1, 1950

Series E

\$7000.00	July 1, 1951
7000.00	July 1, 1952
6000.00	July 1, 1953
6000.00	July 1, 1954
6000.00	July 1, 1955, and

Whereas, The sealed proposals received were as follows, to-wit:

Lewis State Bank, Tallahassee, Fla., 97.310% of par plus accrued interest.

John Nuveen & Co., Chicago, Ill., 97.30% of par plus accrued interest.

Stranahan, Harris & Oatis, Jacksonville, Fla., 97.157% of par plus accrued interest.

Caldwell & Co., Nashville, Tenn., 95.791% of par plus accrued interest.

Weil, Roth & Irving, Cincinnati, Ohio, 95.131% of par plus accrued interest.

Providence Savings Bank & Trust Co., Cincinnati, Ohio, 95.10% of par plus accrued interest.

All of said bids being submitted subject to final approving opinion, and

Whereas, None of the said bids was accepted, but pursuant to verbal notice given at the time of receiving said bids, the chairman and the attorney for the State Road Department, in Jacksonville, Florida, on November 13th, 1928, gave opportunity for additional bids, and that thereupon Dupont-Ball, Incorporated, of Jacksonville, Florida, was the highest bidder therefor, bidding 97.61% of the par value of said bonds, plus accrued interest to date of delivery, and subject to final approving legal opinion, and

Whereas, The chairman of this Department, acting for the said Department, accepted the said bid, delivery of said bonds to be made to the Florida National Bank in Jacksonville, Florida, accompanied by final approving legal opinion, upon the payment of said bid of 97.61% of the par value of said bonds, plus accrued interest to date of delivery of same; now, therefore, be it

Resolved, by the State Road Department of the State of Florida, That the action of the chairman in accepting the said bid and making sale of the said bonds to said Dupont-Ball, Incorporated, at and for



View from Wekiva River Bridge Between Sanford and Mt. Dora

the price of 97.61% of the par value of said bonds, plus accrued interest on same to date of delivery, be, and the same is, hereby ratified, approved and confirmed, and that the said chairman be, and he is, hereby authorized and empowered and directed to make delivery of said bonds to said Dupont-Ball, Incorporated, at the Florida National Bank at Jacksonville, Florida, upon payment by said purchaser to this Department of the amount of its said bid.

LEON COUNTY—STATE ROAD 1 \$90,000.00 of Bonds

On motion of Mr. Green, seconded by Mr. Bayliss, the following resolution was unanimously adopted:

Whereas, On the 17th day of November, A. D. 1928, the following agreement was entered into between the Board of County Commissioners of Leon county and the State Road Department, acting by and through its chairman, to-wit:

This Agreement, made and entered into this 17th day of November, A. D. 1928, by and between the State Road Department of the State of Florida, acting by and through the chairman thereof, and the County of Leon, acting by and through the Board of County Commissioners of said county:

Witnesseth:

Whereas, The State Road Department of the State of Florida has received bids for the construction of that part of State Road No. 1 in said County of Leon between Tallahassee and the Gadsden county line, the lowest of said bids being the sum of \$189,673.70; and

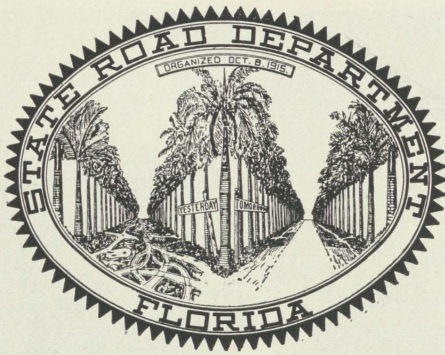
Whereas, The said Department desires to let a contract pursuant to said bid for the construction of a concrete highway on said section of said road in Leon county; and

Whereas, The Board of County Commissioners of Leon County, Florida, has transferred and delivered to said State Road Department ninety bonds of the par value of One Thousand Dollars each, said bonds to be applied by said State Road Department as county aid toward the construction of said road;

Now, Therefore, This Agreement Witnesseth: That the said State Road Department, for and in consideration of the delivery to it of the bonds hereinabove mentioned, receipt of which is hereby acknowledged, does agree to and with said Board of County Commissioners of Leon county, Florida, that it will use, expend and employ an amount equal to the par or face value of the bonds so transferred and delivered solely and only in the construction of a concrete highway on said section of said road; and said State Road Department further agrees to and with said Leon county that it will promptly enter into contract to construct a concrete highway on said state road in accordance with the low bid above recited, and at and for the sum of \$208,641.07, which includes the said low bid and an additional amount of ten (10%) per cent thereof for engineering and contingencies.

The said State Road Department of Florida further agrees to and with the said Board of County Commissioners of Leon county that when the said bonds hereinabove described have been sold by said Department and the said Department has received the proceeds therefrom, that it will promptly pay to the said Board of County Commissioners the amount of interest accrued on said bonds from July 1, 1928, up to the date of this contract.

In Witness Whereof, the said State Road Department has caused these presents to be executed by its chairman and attested by its secretary, and the said Board of County Commissioners of Leon county, Florida, has caused the same to be executed in its



Florida Highways

Published Monthly
Official Publication of the State Road Department

PERSONNEL OF DEPARTMENT

F. A. HATHAWAY (*Jacksonville*), *Chairman*
(*Official Residence, Tallahassee.*)

E. P. GREEN, *Bradenton*

W. J. HILLMAN, *Live Oak*

J. HARVEY BAYLISS, *Pensacola*

I. E. SCHILLING, *Miami*

WALTER P. BEVIS, *Tallahassee, Secretary*

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L. K. Cannon, Tallahassee.....Ass't. State Highway Engineer
G. L. Derrick, Tallahassee.....Bridge Engineer
C. W. DeGinther, Tallahassee.....Ass't. Bridge Engineer
Harvey A. Hall, Gainesville.....Testing Engineer
F. W. Berry, Jr., Tallahassee.....Office Engineer
Paul G. Kennemur, Gainesville, Acting Supt. of Equipment
R. L. Bannerman, Marianna.....Div. Engr.—1st Div.
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Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa
Rosa, Wakulla, Walton, Washington.

J. H. Dowling, Lake City.....Div. Engr.—2nd Div.
Counties—Baker, Bradford, Clay, Columbia, Dixie, Duval, Ham-
ilton, Lafayette, Madison, Nassau, Suwannee, Taylor, Union.

R. J. Cassie, Fort Pierce.....Div. Engr.—3rd Div.
Counties—Brevard, Indian River, Martin, Okeechobee, St. Lucie.

L. B. Thrasher, Ocala.....Div. Engr.—4th Div.
Counties—Alachua, Citrus, Lake, Levy, Gilchrist, Marion, Put-
nam, St. Johns, Sumter, Flagler, Volusia.

A. W. Kinney, Lakeland.....Div. Engr.—5th Div.
Counties—Hernando, Hillsborough, Manatee, Orange, Osceola,
Pasco, Pinellas, Polk, Seminole.

R. C. Fergus, Fort Lauderdale.....Div. Engr.—6th Div.
Counties—Broward, Dade, Monroe, Palm Beach.

Henry Wilson, Punta Gorda.....Div. Engr.—7th Div.
Counties—Charlotte, Collier, DeSoto, Glades, Hardee, Hendry,
Highlands, Lee, Sarasota.

Auditing Division

S. L. Walters, Tallahassee.....Auditor

B. A. Meginniss, Attorney for the Department,
Editor and Business Manager.

behalf by its chairman and its clerk, all done in duplicate, this 17th day of November, A. D. 1928.

STATE ROAD DEPARTMENT OF FLORIDA,

By F. A. Hathaway, Chairman.

Attest: W. P. Bevis, Secretary.

(Seal)

BOARD OF COUNTY COMMISSIONERS OF
LEON COUNTY, FLORIDA,

By Geo. J. Sullivan, Chairman.

Attest: Paul V. Lang, Clerk.

(Seal)

Now, Therefore, be it Resolved, by the State Road Department of the State of Florida, That the execution of the said agreement hereinabove recited, by the Department through its chairman, be and the same is hereby ratified and confirmed, and that this Department does hereby obligate itself to carry out the several agreements on its part stipulated to be performed.

Be it Further Resolved, That the chairman be and he is hereby authorized to sell and dispose of the said \$90,000.00 of bonds to the highest bidder, after due advertisement.

Glades County—State Road 26

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted.

Be it Resolved, That the Department do take over for maintenance by the state that portion of State Road 26, in the county of Glades, between Main's Corner and Moore Haven, the same to be effective January 1, 1929, and when the county shall turn over to the State Road Department the sum of four thousand (\$4000.00) dollars in cash.

Project 769—Road 5, Caloosahatchee River Bridge

Project 772—Road 5, Peace River Bridge

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Be It Resolved by the Department, That the bridge across the Caloosahatchee river, on Road 5, or Tamiami Trail, which is and comprises Project 769, be and the same is hereby named and designated as the "Thomas A. Edison Bridge."

Be It Further Resolved, That the proposed bridge across Peace river, on State Road 5, or Tamiami Trail, at Punta Gorda, be and the same is hereby named and designated as the "Barron Collier Bridge."

Be It Further Resolved, That copies of this resolution be transmitted by the secretary to Messrs. Thos. A. Edison and Barron G. Collier, with the advice that this action has been taken by the State Road Department in commemoration of their valued and distinguished services to the State of Florida.

Naming of Bridges

In connection with the naming of the bridges covered by the resolution last hereinabove set out, the secretary was directed to make record in this connection of the former action of the Department in naming and designating the bridge across Manatee river, on State Road 5 as the "E. P. Green Bridge"; of the naming and designation of the bridge across Sebastian river, on State Road 4, as the "I. E. Schilling Bridge," and the naming and designation of the bridge across Suwannee river, on State Road 1, as the "Hillman Bridge."

Project 733, Road 33, Walton County

Whereas, Walter J. Bryson Paving Company, contractor, and Southern Surety Company of New York, its surety, have applied to this Department for written consent to assign and transfer to Penton-Mathis Construction Company the contract made and entered into on the 27th day of November, A. D. 1928, between the State of Florida, by this Department, and the said Walter J. Bryson Paving Company for clearing, grubbing, grading, drainage structures and sand-clay surface on Project 733, Road 33, in Walton county, from the Okaloosa county line to the Alabama State line, and

Whereas, It appears that such application is made in accordance with the provisions of paragraph 8.1

of section 8 of the Standard Specifications attached to and forming a part of said contract, and that it is understood and agreed that such transfer and assignment of said contract shall in no particular release the contractor and/or its surety of its and/or their responsibility under the said contract and/or the contract bond thereto attached and forming a part thereof,

Now, Therefore, Be It Resolved by the State Road Department, That consent is made in accordance with the said provisions of paragraph 8.1 of section 8 of said Standard Specifications, and that a certified copy of this resolution be forwarded to the said contractor and copy attached to the original contract as and for the written consent of this Department to said assignment and transefer.

Award of Contracts Approved

On motion of Mr. Schilling, seconded by Mr. Green, the following resolution was adopted:

Whereas, Contracts have been awarded by the Chairman for maintenance, as hereinafter set out, and

Whereas, It appears that the action of the Chairman in so awarding such contracts is in the interest

of the progress of the work, and that the same have been let at prevailing prices; now, therefore,

Be It Resolved, That the action of the Chairman in awarding and executing such contracts be, and the same is, hereby ratified, approved and confirmed, which said contracts are as follows:

Project No.	Road No.	County	Contractor	Work Contemplated	Price
669-C	27	Dade	H. E. Wolfe Construction Co.	S. T.	\$64,401.93
669-D	27	Dade	H. E. Wolfe Construction Co.	S. T.	10,037.30
669-E	27	Collier	Alexander, Ramsey & Kerr	Guard Rail	5,005.00
669-W	27	Collier	Alexander, Ramsey & Kerr	Guard Rail	5,800.00
764	50	Suwannee	Duval Eng. & Cont. Co.	S. T.	38,527.65

Project 735—Road 40, Walton County

Whereas, Walter J. Bryson Paving Company, contractor, and Southern Surety Company of New York, its surety, have applied to this Department for written consent to assign and transfer to Penton-Mathis Construction Company the contract made and entered into on the 27th day of November, A. D. 1928, between the State of Florida, by this Department, and the said Walter J. Bryson Paving Company for clearing, grubbing, grading, drainage structures and sand-clay surface on Project 735, Road 40, in Walton county, from the end of Project 734 to the Alabama State line, and

Whereas, It appears that such application is made in accordance with the provisions of paragraph 8.1 of section 8 of the Standard Specifications attached to and forming a part of said contract, and that it is understood and agreed that such transfer and

assignment of said contract shall in no particular release the contractor and/or its surety of its and/or their responsibility under the said contract and/or the contract bond thereto attached and forming a part thereof.

Now, Therefore, Be It Resolved by the State Road Department that consent is made in accordance with the said provisions of paragraph 8.1 of section 8 of said Standard Specifications, and that a certified copy of this resolution be forwarded to the said contractor and copy attached to the original contract as and for the written consent of this Department to said assignment and transfer.

On motion of Mr. Schilling, seconded by Mr. Green, the expense accounts of the members were approved and ordered paid.

There appearing no further business, the Department was adjourned.

Nothing But the Truth

The prosecuting attorney had encountered a rather difficult witness. At length, exasperated by the man's evasive answers, he asked him whether he was acquainted with any of the jury.

"Yes, sir," replied the witness; "more than half of them."

"Are you willing to swear that you know more than half of them?" demanded the man of law.

The other thought quickly.

"If it comes to that," he replied, "I am willing to swear that I know more than all of 'em put together!"

"A Bum Way to Get a Cat"

Jean longed for a kitten. When illness made it necessary for Jean to go to the hospital, her mother said:

"I will make a bargain with you, Jean. If you will be a brave little girl about your operation, you shall have the nicest kitten I can find."

Jean took ether, but later, as she came out from under the anesthetic, she realized how very wretched she felt. The nurse leaned over to catch her first spoken word.

"What a bum way to get a cat!" moaned the child.

State Highway Officials Ask \$100,000,000 for Federal Aid Roads

By J. W. Hannen

AT THE fourteenth annual meeting of the American Association of State Highway Officials, held in Chicago, November 12-14, the attendance was 341, which broke all previous attendance records.

As in all previous meetings of this organization of State highway officials whose business is building the roads of the nation, much was accomplished that will result in material progress in national highway construction, design, and methods. Outstanding among the accomplishments of the convention, was a resolution unanimously adopted, asking Congress for an appropriation of \$100,000,000 for Federal Aid in road construction for a two-year period, instead of \$75,000,000, which has been the rule during several previous sessions.

Another feature of the convention was a resolution urging a ban upon toll bridges promoted and built by private interests, but expressing no decided opposition to privately built toll bridges under state control, where public financing is impossible.

Among other resolutions adopted in a report of a committee headed by Governor-elect Buck of Delaware, were the following:

That the states avail themselves of cooperation with the government in geographical surveys.

Favoring Federal Aid appropriation of \$5,000,000 for trails in national parks.

Urging increased Federal Aid in public land states to complete and fill in gaps on U. S. highways.

Affirming the attitude expressed in a resolution adopted at Denver a year ago, in opposition to advertising signs along highways, and recommending that such signs, if allowed, be placed no nearer than 500 feet from the right of way.

Urging a survey of interstate traffic, and all types of bus and freight vehicles.

Officers Elected

The following officers were elected: John N. Mackall, chairman of the Highway Commission and chief engineer, Maryland, president; C. P. Fortney, chairman of the State Highway Commission, West Virginia; J. M. Fournery, State Highway Engineer, Louisiana; Royal Cochran, State Highway Engineer, Nebraska, and R. S. Sterling, chairman of the State Highway Department, Texas, vice-presidents; Frederic E. Everett, Commissioner of Highways, New Hampshire; Z. E. Sevison, State Highway Engineer, Wyoming; Samuel Eckels, chief engineer, Pennsylvania, members of the executive committee; W. W. Mack, secretary of State Highway Commission, Delaware, treasurer. The executive secretary will be chosen by the executive committee. This will, undoubtedly, be W. C. Markham, who has held this important office for many years.

The time and place of the meeting in 1929 will be determined by the executive committee. It has been the custom to hold the annual meetings in the home state of the newly elected president.

The large delegations present from numerous states was noticeable, and only a few states were not represented. In discussing the outlook for favorable national legislation for providing Federal Aid, Exec-

utive Secretary Markham stated in an interview: "The encouragement expressed by Mr. Hoover in his St. Louis speech is reflected in the attitude of the highway officials from every state represented here. Not only will the Federal government be asked to enlarge the scope of its participation in the construction of interstate thoroughfares, but the states themselves give every evidence of taking long strides in the increase of beautified state and local highways. Iowa has adopted a \$100,000,000 bond issue program, and Missouri an issue for \$75,000,000. Other states are following this plan and it is safe to predict a greater advancement in highway facilities in the next four years than has been brought about in any like period in the past."

Frank T. Sheets, State Highway Engineer of Illinois, retiring president, in his formal address laid stress upon the necessities of metropolitan areas in promoting traffic facilities. He said: "In the great metropolitan areas highway construction has not kept pace with traffic needs. Before a new road becomes travel-stained it is loaded almost to capacity. The peak loads reach heights which leave the engineer almost at his wits' end. Only seemingly bold and daring enterprises, coupled with unprecedented expenditures, will provide any permanency of solution."

Mr. Sheets also discussed the subject of financing highway programs in the states, and expressed the opinion that commercial vehicles now enjoy almost free use of state, city and national highways, are not carrying their proportionate share of the cost burden. He indicated that a sentiment is growing in the country that the license fee distribution should be revised.

In line with the contention of Retiring President Sheets regarding the problems involved in metropolitan areas, Robert Kingery, general manager Chicago Regional Planning Association, gave some important information relative to the manner in which that association in the city of Chicago is grappling with its perplexing problems. Mr. Kingery declared that in the city of Chicago \$120,000,000 had already been appropriated for widening streets. He asserted that there exists a great lack of uniformity in traffic signals and markings, which has become the concern of large municipalities.

In discussing the activities of his organization he stated that 280 cities and villages were included in the metropolitan area of Chicago. He expressed his opinion that there was a great lack of standards in the matter of railroad grade and crossing signals, and declared that signals should be established at the right hand side of the highway. He condemned in no uncertain terms the establishment of concrete base signals in the center of highways, as being a menace to traffic and recommended a uniformity of crossing signals in every city. He referred to the establishment of sewer and water systems as being necessary considerations in the planning of wider streets. He also favored the establishment of highways to connect with air ports and advocated wider pavements, and did not hesitate to state that already this situation was demanding serious consideration,



Conditions Encountered South of Baldwin on Road 13 Before Paving. Standard Pavement Here Now.

and that no adequate solution had as yet been presented. He advocated serious attention to the separation of grades, and conceded that the approaches to such grades were difficult to obtain in many communities in order to secure the necessary width to facilitate traffic.

Mr. Kingery described the three-state route now being established from the city of Milwaukee through Chicago to the Michigan-Indiana line, in which it is planned to establish a 200-foot right of way. He said that 110 miles of such right of way had already been secured of a total of 180 miles. It is pertinent to state that this proposed boulevard would connect with U. S. 31 traversing western Michigan north from the Indiana state line, a considerable portion of which has already been widened, the greater extent of mileage to the Straits of Mackinac being paved with 20-foot concrete.

"Freedom of the Road"

One of the important features of the convention was an address by Thos. H. MacDonald, chief of the U. S. Bureau of Public Roads, in which he discussed "The Freedom of the Road." Mr. MacDonald referred to the menace of private interests in their invasion of the country's highways. He declared that efficient use could be made of all of the highway area and expressed the opinion that it was only by the organization of national, state, and county units that effective cooperation could be successfully achieved, and he said that it was the purpose of the Bureau of Public Roads to cooperate with the states and the cities in working out these problems. He also declared that there was a distinct lack of uniformity in the regulation of the use of highways. Mr. MacDonald said that the group of highway officials assembled at this convention represented the greatest highway authority ever gathered together in one room, and had the power and the initiative to grap-

ple with the problems of the highways of the nation, and stated that this was its most important function. He condemned private toll bridges as not according to sound public policy, and stated that the shoestring promoter should be excluded in the matter of toll bridges and toll roads, but declared that where projects are established by state authority the cost should be paid out of earnings, after which time they should be free to public traffic. He referred to the problem of interstate traffic and recommended investigations that would best promote this public facility. He also declared that airways had become one of the concerns of the Division of Commerce.

Mr. MacDonald earnestly suggested that all agencies concerned in traffic should be brought together in coordination for the solution of the problems involved, and stated that such cooperation should be the dominating motive, and asserted that the nearer regulation by states is kept the better the regulation of competition, and he urged that this situation be earnestly studied and analyzed, and said that constructive regulation is a sure cure for non-regulation. He also commended the movements in various larger communities to solve congestion problems by wider highways, and stated that auxiliary highways to relieve congestion are now of great concern. He advised in this connection a constructive program of research as being essential. He also declared that the secondary road has become a live problem. Mr. MacDonald made an appeal for clean roadsides, and stated that this movement had just begun, and that many states are regulating roadside business enterprises along rights of way, and that beautifying the roadside is being gratifyingly encouraged, declaring that this is truly a national problem. He closed with the assertion that the freedom of the public highway is the chief aim of self-government.

One of the features of the convention was an ad-

dress by C. M. Babcock, Commissioner of Highways of Minnesota, discussing snow removal methods of that state. Mr. Babcock presented much valuable information, illustrated by moving pictures, showing how this problem is handled in his state, and declaring that the heavy snow blockades necessitated the building of heavier machinery by the state than could be obtained from manufacturers. He said, however, that purchased equipment had been enlarged and strengthened to meet the difficulties presented. Mr. Babcock declared that the matter of snow removal had become a fixed practice and that it was a strong factor in keeping business moving during the winter months, whereas, in former years, outlying towns and communities were isolated during the winter season. He discussed this practice as being a stimulation to educational and social activities, as well as a business proposition.

Another problem which is of considerable concern, especially to the western states, known as public land states, was discussed by Henry H. Blood, chairman of the State Road Commission of Utah. Mr. Blood made a strong appeal for the influence of the organization to secure additional aid from the U. S. government in the area comprising eleven states where the highways could not be built without a much larger appropriation of government aid than is now being received, because a very large area consists of untaxable lands from which no revenue could be derived by the states. This subject was given attention by the resolutions committee and increased aid requested at the hands of Congress.

Much was accomplished by various committees whose reports were submitted in detail at the closing business session, these reports being designed as helpful to the various State Highway Department organizations.

Predominating in many of the discussions was the absolute necessity of establishing adequate safety provisions on the highways, and providing for increased width of rights of way for wider pavements which is being increasingly demanded in all of the states.

The Michigan State Highway Department was represented by State Highway Commissioner Frank F. Rogers, Deputy Commissioner Chief Engineer G. C. Dillman, Chas. M. Ziegler, superintendent of State Construction, C. E. Foster, Construction Engineer, V. R. Burton, Engineer of Research and Statistics, M. DeGlopper, Engineer of Equipment and Materials, and H. W. Hagaman and A. L. Burrige, Division Engineers.

Commissioner Rogers and Deputy Commissioner Dillman were active in the proceedings of the conferences, Mr. Rogers as member of the Administration Committee, and Mr. Dillman in conference with members of the association who are members of the Mississippi Valley Association of Highway Officials, in preparation for the meeting of the latter organization to be held January 14. Mr. Dillman is secretary of this organization.

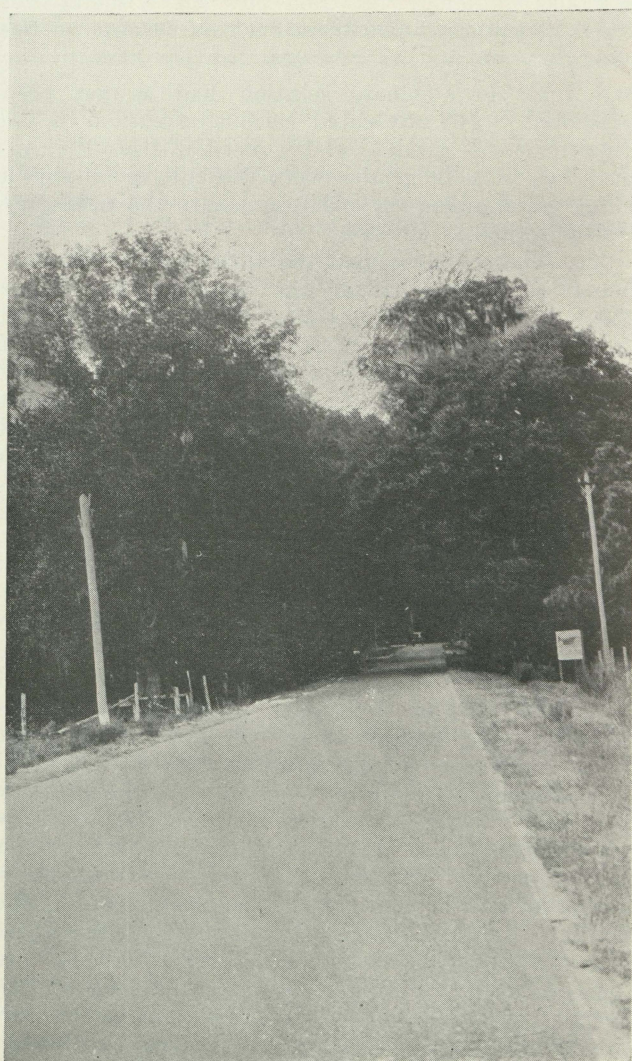
V. R. Burton, Engineer of Research and Statistics, gave special attention to this division of the activities of the national organization, as he is recognized as being one of the most prominent officials in the country dealing directly with highway research and statistics.

Several new Federal roads in the southwest and east were announced after the close of the convention of the American Association of Highway Officials. Texas will acquire two of the roads.

U. S. highway No. 36, now ending at the Colorado-Kansas border, will be continued as a gravel road to Denver. It is now almost ready for traffic. The highway starts at Indianapolis.

Vice President Charles G. Dawes made a personal plea for the extension of U. S. highway No. 50 to include Marietta, Ohio, his birthplace, and Athens, Ohio. The highway now leads from Washington, D. C., westward through Parkersburg, W. Va. That route will be known hereafter as U. S. highway No. 50 south, while the new route, leading from just east of Parkersburg through Marietta to just west of Athens, where it again will join No. 50 south, will be known as U. S. highway No. 50 north.

U. S. highway No. 20 has been split at Norwalk, Ohio, it was announced, to lead southeast through Wooster and New Philadelphia, Ohio, to connect with U. S. highway No. 50, thereby reducing the distance by highway between Chicago and Washington, D. C., by many miles.—Michigan Roads and Pavements.



State Road No. 3 South of Jacksonville Before State Construction

Edward Livingston Trudeau

By A. Schaeffer, Jr.

"His life was gentle, and the elements
So mix'd in him that Nature might stand up,
And say to all the world, this was a man!"
—Shakespeare.



A DOCTOR, doomed by tuberculosis, hunting foxes in the Adirondack Mountains in 1875, noticed that the less he walked, the better he felt. Today one of the greatest sanatoria in the world forms a monument to that observation. Edward Livingston Trudeau was the physician, and the Adirondack Cottage Sanatorium, world-famous center for treatment and research, is the monument.

Trudeau was born in New York City, October 5, 1848. He was the descendant of many generations of French physicians, and was thus well qualified by heredity for the discovery he was destined to make. His youth was spent with his grandparents in Paris, where he obtained his education in French schools. Returning to New York at eighteen, he was able to spend several years of leisure, during which he engaged in popular social activities and athletic sports. Then, deciding to settle upon some career, he secured an appointment to the Naval Academy, which was then at Newport.

He gave this up to become the devoted nurse of his brother, who had contracted tuberculosis. During the illness Trudeau often slept with his brother, and by order of the attending physician every window in the room was kept tightly closed. Of course, he also contracted tuberculosis. It was not until he had married and established himself in medical practice several years later, however, that the fact was realized, although in the light of present knowledge he had had several warnings. The first resulted from a walking match from Fifty-ninth street to the Battery. Although he was an excellent athlete and sportsman, he was thoroughly exhausted from the match for several days, and developed a "cold" abscess which had to be operated on several times.

While in England during his honeymoon the second warning came in the form of swelling of the lymphatic glands, but so little was the mechanism of tuberculosis infection known then that no alarm was felt.

Actual discovery came when a fellow physician declared he looked ill and insisted on taking his temperature. It was 101 degrees! Still unconcerned, and merely to forestall an argument, Trudeau went to a specialist for examination. He was told that the upper two-thirds of his left lung was involved.

In those days a diagnosis of tuberculosis was considered a death sentence. Trudeau felt that he was merely beating time, but he did try in the South and in Minnesota to improve his health. His traveling was in vain so he decided to spend his last days in his favorite hunting ground in the Adirondack Mountains. This region was then a wilderness braved only by ardent sportsmen, but he was determined to take a chance and remain there throughout the winter of 1874. So deep-rooted at that time was the belief that a consumptive should seek a warm and sunny climate and avoid cold and storm, that only after considerable argument and persuasion could he induce Paul Smith and his wife to allow him and his family to spend the winter at their hunting lodge.

On his fox-hunting trips during that winter Trudeau made the observation regarding the value of rest in treating tuberculosis. "I found," he said, "that I could not walk enough to stand much chance for a shot without feeling sick and feverish the next day, and this was the first intimation I had as to the value of the rest cure. I walked very little after this, and my faith in the value of the rest cure became more and more fully established."

The idea of building the sanatorium originated in his reading, in 1882, an account of Brehmer's Sanatorium in Silesia. No information was available regarding the planning and building of sanatoria, but Dr. Trudeau "felt that aggregation should be avoided, and segregation, such as could be secured by the cottage plan, would be preferable. By this plan an abundant supply of fresh air could be secured, and the irritation of constant close contact with many strangers could be avoided."

His first patients at Saranac were two sisters, factory girls, and the first building was completed in February, 1885. It consisted of one room, 14x18, and a little porch so small that only one patient could sit out at a time. It has been known as "The Little Red," and is historical as the pioneer cottage in the development of sanatorium treatment in America. It is now kept as a relic and museum.

In the same year in which Trudeau read of Brehmer's sanatorium, Koch's epochal paper on "The Etiology of Tuberculosis" appeared. Trudeau determined to prove Koch's experiments for himself, and plunged into experimental work with guinea pigs. In order to carry out his laboratory work he was forced to make his own apparatus, keep his guinea pigs warm in a hole in the ground, and arise several

times each night during cold snaps to stir up the fire and provide the correct temperature for his cultures. He succeeded despite the handicaps, and his laboratory (at first a makeshift place that was burned down and later rebuilt) was the first in this country to be devoted to the study of tuberculosis.

As his work became known he received the cooperation of the peers of the medical profession. His sanatorium soon became an assured success and his long, single-handed fight in the dense woods of the Adirondacks against the tubercle bacillus was winning him high honors. One of the greatest of these was his unanimous election in 1904 as the first president of the newly organized National Tuberculosis Association.

During his life Dr. Trudeau was forced many times to take to his bed because his tuberculosis lesion had become active, and several times his life was despaired of. Yet he lived until November 15, 1915, to the age of sixty-seven years.

Before his death he had the satisfaction of seeing the benefits of his laborious research and experiments carried into every corner of the United States by bits of colored paper—the penny Christmas seals.

Since the time when Trudeau was the first president of the National Tuberculosis Association the association has become the parent of 1,400 affiliated associations in all parts of the United States. Through its organized campaign supported by funds raised in the annual Christmas seal sales, it has been greatly responsible for reducing the death rate from tuberculosis 50 per cent.

In a speech Trudeau delivered shortly before his death he said, "Over the doors of the hospitals for consumptives twenty-five years ago might well have been written these words: 'All hope abandon ye that enter here.' While today, in the light of new knowledge we may justly place at the entrance of the modern sanatorium the more hopeful inscription: 'Cure sometimes, relief often, comfort always.'"

Highway Bond Issues Totaling \$240,000,000 Were Approved On Election Day in Four States

HIGHWAY bond issues totaling \$240,000,000 were passed in four states on election day, while two bond issues, amounting to \$110,000,000, were defeated.

This statement has been issued by National Headquarters of the American Automobile Association, along with the announcement that in every instance, with the exception of one, the attitude of the voters was in strict accord with that of affiliated A. A. A. motor clubs in the states where the bond issues were up.

The national motoring body declares that decisive victories were registered for a bond issue of \$30,000,000 in Louisiana; \$100,000,000 in Iowa; \$75,000,000 in Missouri, and \$35,000,000 in West Virginia. A bond issue of \$75,000,000 in Pennsylvania, which was opposed by the Pennsylvania Motor Federation, A. A. A. affiliation, on the grounds that the state already had ample funds for construction, was defeated, while a \$60,000,000 bond issue in Colorado, favored by the Rocky Mountain Motorists, Inc., another A. A. A. unit, also went down to defeat.

California had a \$10,000,000 bond issue up for the elimination of grade crossings, but this was defeated. On the other hand, says the A. A. A., a \$6,000,000 bond issue for state parks, which was favored by the California State Automobile Association, A. A. A. affiliation, was carried by a vote of three to one.

The national motoring body says that perhaps the most significant of the bond issues before the voters was the \$75,000,000 issue in Missouri, which was originated by and put over largely through the efforts of the Automobile Club of Missouri, of which Major Roy F. Britton is president. A previous bond issue of \$60,000,000, authorized in Missouri in 1920, has been exhausted.

It was pointed out that this issue provides for the completion of the highway system in a state with a strategic location in the nation's network; assures widening of roads in the congested areas around St. Louis and Kansas City, and even more significant,

limits the gas tax of 2 cents and motor vehicle license fees, through constitutional amendment, to the present rate for a period of ten years.

"Protection of the car owners from an increasing tax burden, through a law written in the constitution of a state establishes a precedent in motordom's fight for fair taxation," says the A. A. A. "Except for the aggressive stand taken by the Automobile Club of Missouri and the vigorous campaign of education it conducted throughout the state, the bond issue would have most certainly gone down to defeat and retarded progress in Missouri."

The Missouri bond issue, it is stated, allows \$25,000,000 for each of three years to be used in building highways and toll-free bridges. It also means the completion of the state's system of 7,640 miles of improved roads, and the construction of farm-to-market roads with the proceeds of the bond issue and the current annual revenue.

Iowa's \$100,000,000 bond issue will mean the improving of the 6,600 miles in the state's primary system, and \$60,000,000 indebtedness voted by 61 counties will be taken over, the Iowa State Automobile Association has advised National Headquarters.

The national motoring body says the Louisiana issue, which raises the gas tax to four cents per gallon, was sponsored by the Motor League of Louisiana from the outset and put over by this A. A. A. unit against almost insurmountable odds. "This is a striking example of the motor club's part in the civic life of a commonwealth," says the statement.

The West Virginia issue sponsored by A. A. A. units in that state, was carried by approximately four to one, and indications point to an even larger favorable vote.

Commenting on the various bond issues, the A. A. A. said they form striking instances of the willingness of the people to vote bonds to supplement Federal Aid and make the nation's highway system the finest in the world.

Contracts Awarded by State Road Department January 1st, 1928, to November 15th, 1928

Contractor—	Project No.	Road No.	County—	Length Miles	Length Feet	Contract + 10 %	Type
Sutton Bros.	55-B	14	Alachua .....	.....	457	\$ 54,272.17	Concrete
General Const. Co.	677-D	13	Levy .....	.....	1,335	43,000.98	Timber
Frost Const. Co.	700-B	17	Hillsboro .....	.....	260	54,775.16	Concrete
Sutton Bros.	764-B	50	Suwannee .....	.....	113	19,043.82	Conc. Overh'd.
Duval Engr. & Contr. Co.	677-D	13	Levy	8.91	.....	110,370.35	R. B. S. T.
E. F. Powers Const. Co.	710-C	17	Hillsboro	12.69	.....	95,125.45	C. G. & G.
B. Booth	755	17	Polk	11.22	.....	58,518.86	C. G. & G.
Little & Lee	757	2	Polk	10.26	.....	63,516.17	C. G. & G.
Little & Lee	758	2	Polk	8.34	.....	46,380.34	C. G. & G.
Gilbert & Hadsock	732	17	Polk	8.94	.....	57,077.26	C. G. & G.
C. G. Kershaw Contr. Co.	736	39	Holmes	8.58	.....	45,097.93	C. G. & G.
C. G. Kershaw Contr. Co.	709	39	Holmes	9.09	.....	53,931.71	C. G. & G.
Morgan-Hill Paving Co.	61-C	1	Gadsden	9.77	.....	244,581.31	Concrete
Franklin Const. Co.	710-A	17	Hillsboro	6.18	.....	38,592.08	C. G. & G.
E. M. Chadbourne	697	1	Escambia .....	.14	666	3,401.25	Surface
Robert G. Lassiter & Co.	683-A	4	Palm Beach	8.04	.....	264,999.43	Concrete
Rutherford Const. Co.	695	2	Lake	3.00	.....	46,992.07	R. B. S. T.
S. G. Collins	827	1	Escambia	8.12	.....	50,151.29	C. G. & G.
M. C. Winterburn, Inc.	61-A	1	Gadsden	10.00	.....	231,578.27	Concrete
Phoenix Asphalt Paving Co.	669-X	27	Collier	9.40	.....	28,814.77	Surface T'd.
Everglades Const. Co.	62-C	24	Osceola	11.83	.....	115,303.71	C. G. & G.
A. D. Weeks	62-D	24	Osceola	12.62	.....	83,299.72	C. G. & G.
A. D. Weeks	61-A	24	Osceola	12.52	.....	66,571.01	C. G. & G.
R. C. Huffman Const. Co.	807-A	25	Palm Beach	10.81	.....	201,713.22	R. B. S. T.
R. C. Huffman Const. Co.	807-C	25	Palm Beach	6.14	.....	99,923.54	R. B. S. T.
C. A. Steed & Sons, Inc.	804	67	Glades	18.55	.....	416,083.52	R. B. S. T.
Duval Engr. & Contr. Co.	659	3	Clay	7.25	.....	95,449.25	R. B. S. T.
Silas Gibson	815	54	Okaloosa	13.58	.....	60,680.23	C. G. & G.
W. J. Bryson Paving Co.	819	54	Okaloosa	4.69	.....	20,979.67	C. G. & G.
W. J. Bryson Paving Co.	823	41	Okaloosa	9.18	.....	34,085.34	C. G. & G.
W. J. Bryson Paving Co.	824	41	Okaloosa	9.81	.....	59,898.02	C. G. & G.
Perkins Const. Co.	820-B	96	Jefferson .....	.....	114	4,881.25	Timber
Maddox Foundry & Mach Co.	743	10	Bay .....	.....	120	13,774.47	Timber
C. C. Hayes	802-A	10	Okaloosa	8.67	.....	76,559.56	C. G. & G.
P. B. Alsobrook	661	2	Lake	0.10	.....	1,980.00	C. G. & G.
Central Station Equipment Co.	769	5	Lee .....	.70	4430	585,216.61	Concrete
Collins Const. Co.	803	10	Okaloosa	11.13	.....	82,342.33	G. & D.
Nelson Brothers	56	10	Leon	12.98	.....	430,409.67	Concrete
Manly Construction Co.	53-C	2	Lake	2.85	.....	67,778.57	Bit. Conc.
Broadbent Constr. Co.	719	5-A	Suwannee	8.57	.....	91,044.80	R. B. S. T.
Duval Engr. & Contr. Co.	764	50	Suwannee	12.00	.....	140,666.31	R. B. S. T.
Wm. P. McDonald Const. Co.	687-B	2	Lake	15.22	.....	209,058.24	R. B. S. T.
Curry & Turner	802-C	10	Okaloosa	10.24	.....	45,545.92	G. & D.
R. J. Carroll	738	42	Jefferson	10.17	.....	69,488.78	G. & D.
Curry & Turner Const. Co.	820	96	Jefferson	9.45	.....	67,870.63	G. & D.
H. E. Wolfe	669-W	27	Collier	16.00	.....	58,856.15	S. T.
Baker & Lewis Const. Co.	740	10	Gulf	9.62	.....	37,400.00	Hauling rock
Alexander, Ramsey & Kerr, Inc.	669	27	Collier	32.00	.....	39,720.00	Guard Rail
L. L. Pararo Const. Co.	685	10	Franklin	14.43	.....	93,500.00	Hauling rock
H. E. Wolfe	669-V	27	Collier	31.62	.....	116,314.44	S. T.
W. B. Wright	723 & 724	66	Leon	21.41	.....	33,000.00	Hauling S.&C.
Bishop Contracting Co.	821	96	Jefferson	5.18	.....	29,359.05	G. & D.
J. B. McCrary Engr. Corp.	672	1	Leon	9.92	.....	208,641.07	Concrete
R. G. Lassiter & Co.	673	1	Gadsden	14.97	.....	292,508.17	Concrete
W. J. Bryson Paving Co.	733	33	Walton	4.23	.....	47,373.22	Sand Clay
Penton-Mathis Const. Co.	734	40	Walton	7.89	.....	69,581.67	Sand Clay
W. J. Bryson Paving Co.	735	40	Walton	13.71	.....	130,342.33	Sand Clay
W. J. Bryson Paving Co.	751	40	Walton	7.28	.....	53,739.49	Sand Clay
W. J. Bryson Paving Co.	752	40	Walton	8.72	.....	63,037.15	Sand Clay
W. J. Bryson Paving Co.	788	10	Walton	17.54	.....	164,274.07	G. & D.
W. J. Bryson Paving Co.	842	115	Walton	10.00	.....	76,591.51	G. & D.
H. E. Wolfe Const. Co.	669-C	27	Dade	12.00	.....	74,142.12	Surf. T.
Totals				588.26	6,829	\$6,339,205.48	

Fair Exchange No Robbery

Young Oswald was always horning in where he was not wanted, and he had a highly exalted opinion of himself.

There were two partners in the firm, and one of them happening to pass on, the young man approached the surviving partner with whom he was not exactly what you could call a favorite.

"I am so sorry, sir, to hear of Mr. John's demise, and I have come to ask if you would like me to take his place."

"Yes, I should very much," was the reply, "if you can get the undertaker to arrange it."

Listen, my children, and you shall hear

Of the midnight ride of Pauline McNear;
She rode off at twelve in a Cadillac—

And at half-past three came hiking back.

—Kentucky Highways.

The English Language

A Belgian student was relating his experience in studying the English language. "When I discovered that if I was quick I was fast," he said, "and that if I was tied I was fast; if I spent too freely I was fast, and that not to eat was to fast, I was discouraged. But when I came across the sentence, 'The first one won one one-dollar prize,' I gave up trying to learn English."

A Frenchman had a similar experience. He was watching a card game and trying to understand what was said.

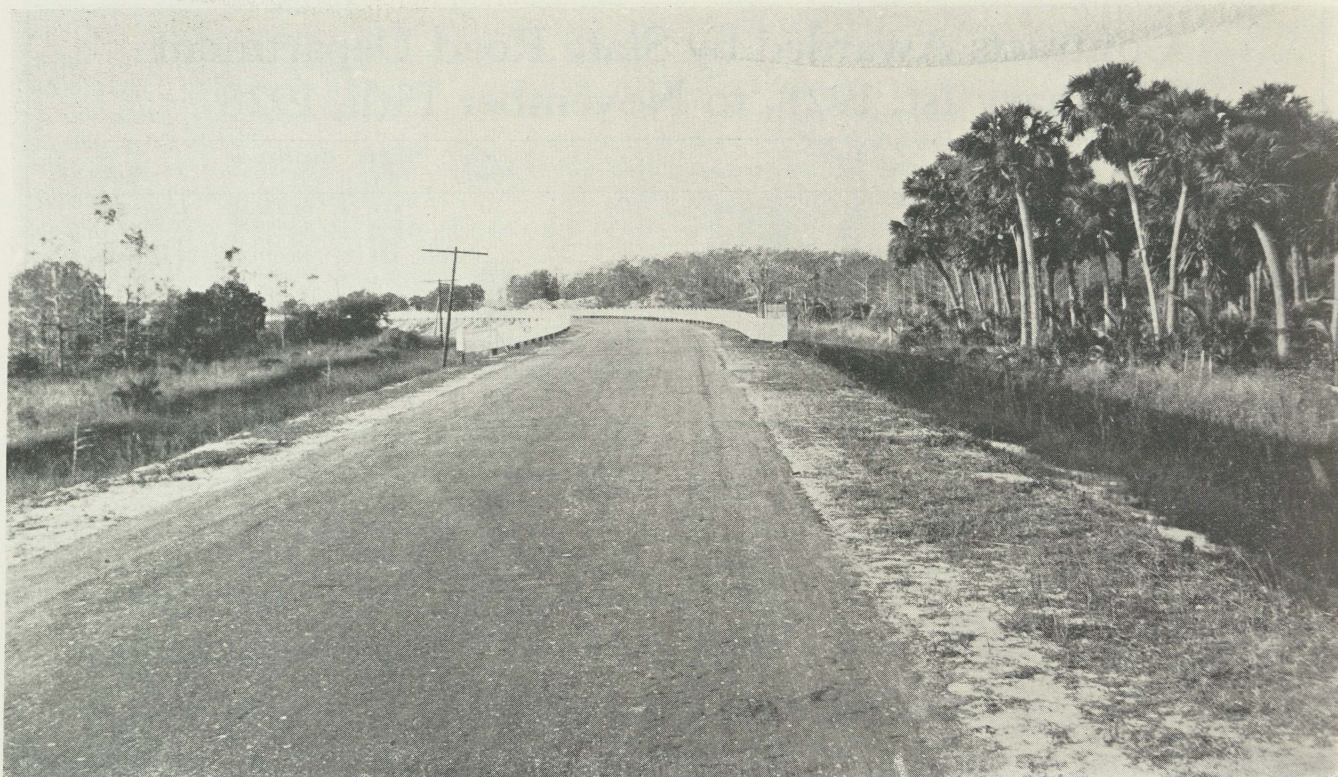
"What's the score?" asked someone.

"Two to two."

"We are two to two, too," said a man at the next table.

This was too much for the Frenchman.

"To spik ze English," he exclaimed, "it is to blow ze French horn."



State Road No. 4, Between St. Augustine and Bunnell

Florida Road Builders Show and Conference

THE first Florida Road Builders' Show and Conference will be held at Jacksonville March 19-23, 1929, President J. J. Hedrick, of the Florida Road Builders' Association, announced, following coordination of the efforts of the several interested agencies. These include: The engineering department and extension division of the University of Florida, the State Road Department, the Florida Engineering Society, the Florida Paving Contractors' Association, the Jacksonville Chamber of Commerce, and various groups of material and equipment men.

While the show will be known as the Florida Road Builders' Show and Conference, it is not the intention of the association to limit either visitors or exhibitors to this state, and invitations are being directed to state highway departments, county commis-

sioners, city and county engineers throughout the Southeast. Eight states will be covered in the invitations, Florida, Georgia, Alabama, Mississippi, Tennessee, Virginia, North and South Carolina.

The conference which will be held will be a school for road builders, with many prominent speakers on the various subjects of interest to contractors, engineers and public officials handling road contracts. On the executive committee of the association are representatives of each of the groups and organizations cooperating in the enterprise.

Besides set exhibits, there will be a demonstration field where road-building machinery of every description may be put into actual operation and many special features are being prepared. As a non-profit project, space will be sold at minimum cost.

LATIN-AMERICAN TOUR OF PRESIDENT-ELECT HOOVER IS EXPECTED TO GIVE IMPETUS TO PROGRAM FOR PAN-AMERICAN HIGHWAY, SAYS AMERICAN AUTOMOBILE ASSOCIATION

The Latin-American tour of President-elect Hoover will in all probability give the needed impetus to immediate formulation of definite plans for the construction of the proposed Pan-American Highway, connecting all nations of the Western Hemisphere.

This statement was issued by National Headquarters of the American Automobile Association, which has consistently supported this project and encouraged highway building in foreign lands.

"The visit of Mr. Hoover to the nations to the far south, coming just a few months before the second Pan-American Congress of Highways, which will meet in Rio de Janeiro in July, 1929, is certain to have a far-reaching effect on the most important matter to be considered," says the national motoring body.

The president-elect's interest in the project is strikingly shown by the fact that while serving as Secretary of Commerce he named J. Walter Drake, former assistant secretary, to personally represent him on the executive committee of the Pan-American Confederation for Highway Education, which is actively interested in the all-American motor road.

The A. A. A. points out that Congress has already

(Turn to Page 14)



The Old Road West of Lake Annie Before the State Built State Road No. 18

Some Considerations in Selecting Roadway Types

By C. N. Conner, Engineer Executive, American Road Builders' Association

THE selection of type for low-cost road surfaces is based on two principal factors, necessity and adequacy. Necessity is evidenced by the immediate need of a long mileage of roads of this class in communities which have insufficient funds for long connected mileages of high type surfaces.

The adequacy of certain materials for surfacing has been demonstrated by states which have used them extensively either as untreated surfaces or with surface treatments.

They will quickly become inadequate without careful construction and intelligent maintenance.

Selection of untreated surfaces is based primarily on the availability and cost of suitable local aggregates for construction. They should be of such quality and gradation that their immediate surface can be bladed or dragged at frequent intervals by motor-driven equipment. Untreated surfaces which meet these requirements are sand-clays, gravel, shale, chert, disintegrated granite, traffic-bound surfaces of fine stone, slag or gravel and caliche.

Macadams and lime rock need a layer of gravel or fine crushed stone before they can be maintained by blading.

Surface treatments with non-bituminous dust preventives are adequate when maintained by frequent blading or dragging.

Bituminous surface treatments or surface courses are considered adequate provided they are susceptible to scarifying, reshaping and retreating at periods of from one to three years and do not exceed about

\$1,200 per mile for this work and the materials. Such types are dual bituminous surface treatments and the mixed-in-place bituminous surfaces.

Surfaces which approach or include the pavement types, such as bituminous macadams, natural rock asphalt and the pre-mixed bituminous surfaces which are laid hot or cold are not as readily maintained by scarifying, reshaping and retreating, and they are not as frequently selected for low cost surfaces.

The riding qualities of a surface are of prime importance. These types, which include blading, dragging or screeding in their construction or maintenance have better riding qualities than those which do not.

Types are desirable which under maintenance or reconstruction can be renewed by the addition of small quantities of new materials as required and without serious interruption to traffic.

The reconstruction and resurfacing of old existing surfaces which have been compacted through years of traffic is frequently possible and advisable. This new surface is usually one of the low-cost bituminous types.

Progressive or stage construction is now recognized as a sound economic policy.

It means the gradual improvement of a highway, first by proper grading and draining; second, by the addition of untreated surfacing aggregates either in this layer, placed at periodic intervals as required, or placed to a greater depth in one operation.

As traffic demands increase this untreated surface

is given one of several types of surface treatment. When traffic requirements become still more severe, a pavement type of surfacing may be indicated. By this method of stage construction, the original investment has not been lost because the materials already in the road have given adequate service for the changing conditions of traffic and the weak spots in the sub-grade have been corrected under maintenance.

In the last stage, the existing untreated or treated surface is of value as a sub-base for the pavement type.

While it is true that tests have shown a greater cost of vehicle operation and tire wear on gravel and stone surfaces than on pavement types, yet it has not been shown by research or test what it costs the owners of vehicles to be without these gravel and stone surfaces.

It is also probable that tests on surface treated gravel and stone would show a considerable reduction in vehicle operation costs below those for the untreated surfaces.

There is small doubt that expensive pavement types have been constructed where a surface of less than half the cost would have been adequate. The desire to cut maintenance costs, to avoid the inconvenience of perpetual surface maintenance, and the lack of knowledge or of equipment to perform this maintenance have been the principal reasons for such selections.

Climatic and soil conditions apparently have not been of major importance in selecting low or high type surfaces because treated and untreated gravel is found in nearly every state regardless of the local conditions.

There is no doubt that the unit weight of vehicles is a factor which cannot be ignored in the selection of type. If the present or probable traffic is to include even a small number of heavy trucks, equipped with solid tires, low type surfaces will frequently become inadequate.

Recently, busses, the milk trucks, and gasoline trucks have become a factor which must be considered or regulated when making a selection of surface.

Selection of type is a prescription proposition. An engineer who is already familiar with the local conditions of his own surfaces, available materials and funds, will do well to make an examination of the work done by others under similar conditions. His final choice will be more easily and intelligently made.

In spite of the deterring factors and perplexing problems involved in selection, low cost road construction has been found necessary and must continue as evidenced by this recent statement from the Chief of the Bureau of Public Roads:

"As a matter of fact, to a large extent all highway construction must be stage construction, and there can be no just criticism of whatever is undertaken if it be undertaken intelligently with a well-defined conception of the future development and if the execution of the idea is efficient."

LATIN-AMERICAN TOUR

(Continued from Page 12)

foreseen the value of this project, not only as a means of moving traffic, but also as a guide and emergency landing field for aviators, as well as an agency of international good will. Congress has also provided for American participation in the Rio de Janeiro conference, and passed a measure which provides that federal agencies lend engineering assistance to the Latin-American nations in highway matters.

"Building of such a motor road," says the A. A. A. statement, "will be perhaps the most important physical step ever taken by a group of nations to promote mutual understanding, encourage travel, and to bring about an intermingling of national ideas with a resultant benefit to all of the countries involved."

President Coolidge has shown a keen interest in the preliminary stages of the highway plan and has placed the resources of his administration behind the project.

Because of the limited time before the Congress of Highways next July, activities will be immediately directed to a study of the most feasible route through Central America and Panama. Later it is intended to extend these studies to the South American countries.

The A. A. A. points out that the Government of Mexico has already formulated a comprehensive highway program. This includes a road from the northern border at Nuevo Laredo to the border of Guatemala, which, it is stated by Dr. Octavio Dubois, chairman of the National Highway Commission of Mexico, will be completed within the next two years, and will form the Mexican link in the inter-American route.

Canine Climber

Mrs. Ladidah—"I'm going to enter Fido in the dog show next week."

Friend—"Do you think he will win?"

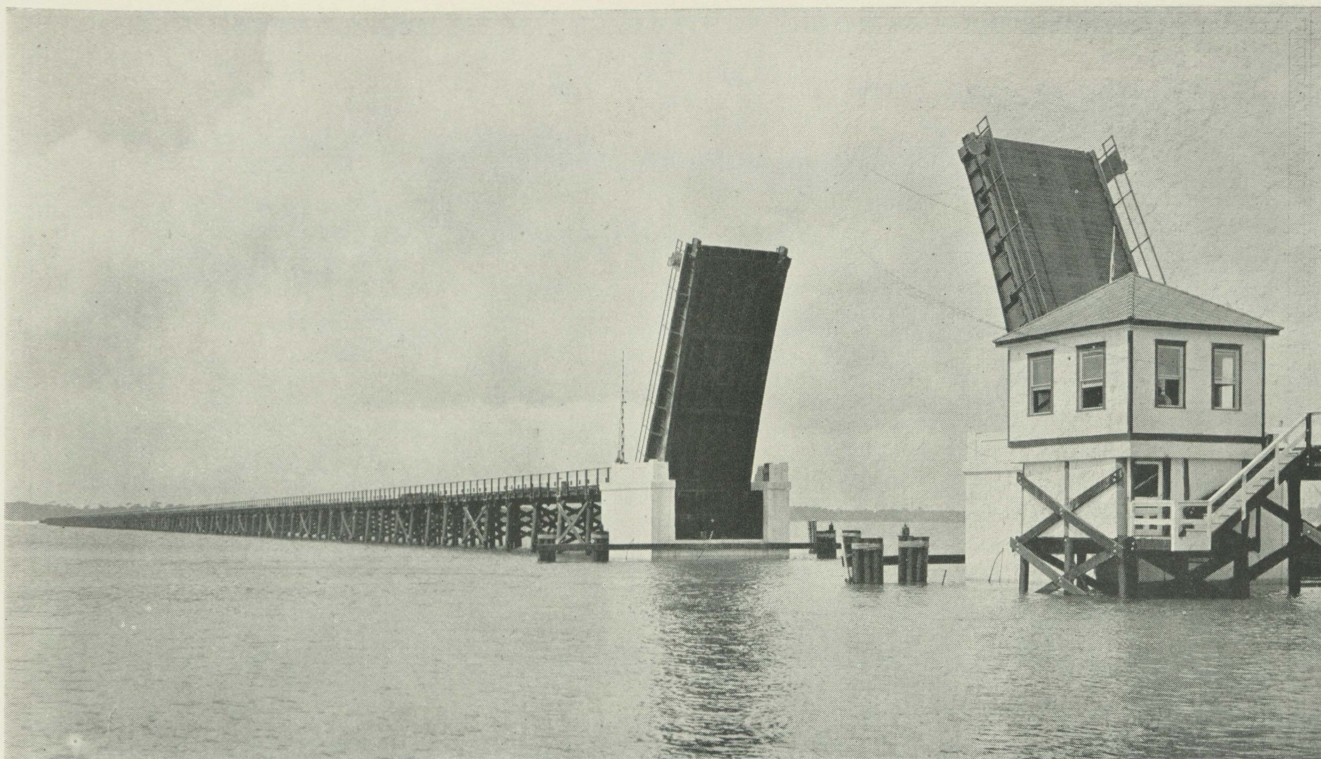
Mrs. Ladidah—"No, but he'll meet some nice dogs."—Tit-Bits.

Keats vs. Eats

The Keats Club was yesterday afternoon at the home of Mrs. J. A. Sears. Weiners and cider were served and a paper was read by Miss Beulah Alexander on the subject, "Old-fashioned Lard vs. Vegetable Substitutes."—Indiana paper, as quoted by the Boston Transcript.

More than 1,100 orators are available for talks on accident prevention, their names and addresses being on file in the speakers' bureaus conducted by fourteen community safety councils.—Public Safety.

The owner of a car of doubtful age ultimately concluded that it needed overhauling. After the garage men walked around it a couple of times one of them remarked: "That's a good spotlight you have. Let's jack it up and run a new car under it."—Kentucky Highways.



Crescent Eeach Bridge Across Matanzas River, Built by St. Johns County at a Cost of \$110,000.00 as Part of that County's \$2,200,000.00 Road Program, 1926-1928

Motorists Need 20-Foot Road

ENGINEERS SHOW BY INTERESTING TESTS

DO YOU know that you drive your car or truck by instinct? You do, for engineers of the Bureau of Public Roads have been watching you. They have made observations to see how far from the edge of the pavement you drive and what you do at curves and on down grades.

Having marked off pavements into one-foot sections, the engineers, by watching the right rear wheels of passing vehicles, find that on straight, level roads of various widths from 14 to 24 feet, with shoulders in fair condition, passenger car drivers habitually maintain a distance of from $11\frac{1}{2}$ to 4 feet between the outer wheel and the edge of the pavement. Truck drivers operate somewhat nearer the edge, but prefer not to approach closer than $11\frac{1}{2}$ feet. Drivers will sacrifice clearance between their own and passing vehicles rather than drive closer to the edge than they instinctively feel is safe.

The bureau's observations indicate that pavements less than 18 feet wide are decidedly too narrow since they provide no clearance for passenger cars or trucks operating in the usual paths. While the 18-foot width is apparently great enough for passenger cars in two-lane traffic, it is not quite wide enough for trucks. The 20-foot width gives ample clearance for trucks and is not excessive for automobiles.

In moving down hill on light grades, traffic moves slightly toward the center of the road. Light down grades do not suggest reduction of speed, hence traffic takes the precaution of moving slightly away from the edge of the pavement. No such tendency was observed on heavy grades where the speed is reduced,

and the instinctive fear of the pavement's edge is lessened.

In rounding horizontal curves, traffic, in general, shifts toward the inside edge, but the trucks shift their courses toward the inside of the curve less than passenger vehicles. Under all circumstances, truck drivers are found to adhere more closely to the edges of the pavement than operators of passenger vehicles.

Traffic moving on the outside of the curve shifts its course farther in the direction of the inside than traffic moving in the opposite direction, which is limited in its choice of a course by the proximity of the edge of the pavement. Unless, therefore, the pavement is widened on the curves, the normal straight road clearance between the two lines of vehicles is reduced.

The used width of a pavement may frequently be considerably less than its apparent width, the observations disclosed. On straight roads, as well as on curves, the outer foot of the surfaced section is sometimes totally ineffective because of a bad shoulder. A closely set guard rail, a steep crown, a bad gutter, or an uneven, bumpy condition of the surface near the edge will cause the driver instinctively to seek the center of the road. In one case, a 24-foot pavement was found to have an effective width of not more than 20 feet because of the abutments of an overhead railroad bridge which were crowded close to the edge of the pavement.

Smooth, white concrete shoulders at the edge of a black surface seem to lure the traffic toward the side. Center lines on straight roads, as well as on curves, exert a marked separatory influence.



HIS administration has recognized the public necessity of Federal Government contribution to the creation of a definite system of modern, interstate highways. This program is far from completion and I stand for its continuance.

—President-elect Herbert Hoover.





Another Glimpse of the Road Condition West of Lake Annie Before the State Constructed Road No. 18

FORD AIRPORT INSTALLS PAVEMENT FOR PLANES

Paved runways, permanent, fire-safe buildings and complete facilities for the efficient handling of passengers, mail and express are combined in one airport for the first time in the history of American aviation. The airport is Ford's, located at Dearborn, eight miles west of the heart of Detroit on a paved highway.

More than 30,000 passengers have passed through the splendidly equipped airport passenger station thus far this year, to take the air in the fleet of Ford tri-motored metal planes operated by the Stout Air Services, chief users of the port for passenger service. In addition, the Ford company's own planes have been constantly on the move, carrying mail and freight to Chicago, Cleveland and Buffalo. The big ships have made more than 10,000 take-offs and landings at the port, since its opening three years ago; smaller planes use the facilities of the field frequently, with the result that the Ford port is one of the busiest in the world.

A feature of the port which makes it particularly popular with pilots of heavy planes is the system of paved runways which is unique in America. A strip of concrete pavement 1,600 feet long and 75 feet wide, augmented by a shorter strip of non-rigid pavement, gives planes facilities for take-off in two directions. Another such concrete pavement, 3,000 feet long, is to be constructed; so take-offs and landings may be made in any of four points of the compass.

Stanley Knauss, General Manager, Stout Air Service, Inc., reports that his pilots are enthusiastic about the new runways, particularly for taking off.

"The take-off from the smooth, uniform surface," says Knauss, "is always positive. The pilot knows that the plane lifts off only when it has attained fly-

ing speed, for there are no bumps or ruts to bounce the plane into the air in 'false' take-offs."

Landing on the paved runways is made feasible by the substitution of a wheel for the usual tail skid and by the use of brakes on the landing gear wheels.

Ford port equipment consists of a huge heated hangar capable of housing many planes, large and small, a smaller hangar, a storage house for parts and motors, a factory where the big ships are produced at the rate of three a week, and the passenger station. Concrete warming-up strips are provided in front of the main hangar and all buildings are connected by paved drives and walks.

Although the Ford port is unique in its class, ports in other cities may soon rival it. St. Louis, Tulsa, Philadelphia, Detroit and New York are planning similar plants with an even greater equipment of paved runways.

WASHINGTON—Yakima County finds that by sprinkling gravel roads before blading them, more economical and satisfactory results are obtained in dry weather. In reshaping, the material is cut out of the center to the depth of the corrugations and then worked back toward the center.

NEW MEXICO has joined the growing ranks of the states which use the oil-mix type of gravel road. An 11-mile section was built in Valencia County in June, and if this proves satisfactory other sections are to be built.

TEXAS—Contracts were awarded by the state highway department for 1553 miles of new construction during 1927 and the first half of 1928. The total estimated cost is \$21,340,000. In addition 1,056 miles of maintenance contracts were let.

Some Observations on the Present Status of Road Building And Methods of Finance

By W. C. Markham, Executive Secretary American Association State Highway Officials, Washington, D. C.

IT HAS been 10 years since this Association met in Chicago. Then it was mostly dreams and with but little reality. That year there were a little over 6,000,000 motor vehicles in the country; now we are trying to furnish a running bed for over 24,000,000. That year each owner of a car paid an average of \$8.25 for the privilege of scaring the horses off the roads; now, adding the gas tax, which was not even in existence at that time in any State, the motor vehicle owner pays an average of over \$26 apiece for the same privilege—and there are no horses in sight. But he has been getting something else for his money during that time. Then there was only a little over 40,000 miles of State highways with any kind of surfacing, while today there are over 162,000 miles surfaced and that does not count 387,000 other rural surfaced miles, much of which has received State aid out of the motor license and gas tax.

While the motor user during these 10 years has increased his annual contribution to roads a little over threefold, the surfaced miles on the State Systems alone have increased more than fourfold.

That year Uncle Sam paid a little over \$575,000 to the States in their road-building work and thought he was quite generous. This last year he added almost \$83,000,000 for his annual contribution, and had plenty left for other worthy causes.

But that is only the gilt on the framework of the picture.

Present Status of Road Surfacing

During the past calendar year 19,500 miles of roads on the State Highway Systems were given some kind of surfacing and a little over 7,000 miles of earth roads prepared for surfacing. In the hearings before the last session of the Congress it was disclosed that the State Systems, including the Federal Aid System—namely, 200,000 miles—have been improved, in some stage, to the extent of 130,000 miles. This left 70,000 miles unimproved to any standard, while 28,000 miles of the improved roads were simply graded and drained. This, therefore, shows that one-half of the Federal Aid System is still without any kind of surfacing. While we were surfacing the 19,500 miles last year, about 11,500 of them were on the Federal Aid System; Federal funds being applied to about one-half, or 5,800 miles. The remainder of the Federal Aid was applied to grading and draining. At this rate of construction it will be about eight years before the State Systems will be given the “once over,” and in the meantime some of the cheaper types will have had such abuse by the traffic that they will be ready for a “twice-over.” We often hear it said that a woman’s work is never done. It would seem from these figures that a State highway engineer’s job is in a like category. This is not news to us, but it seems necessary to state it for the benefit of those people who want to know when “Uncle Sam is going to quit paying out money for roads,” or that other class who would divert Federal and State funds for a purely local requirement.

There are but two States in the Union whose State Systems are over 75 percent paved. But five more States are from 50 to 75 percent paved. This makes

but seven states whose State Systems are more than half paved. The entire State System mileage of the country is less than 20 percent paved.

There are three States, however, each having more than 5,000 miles of paved roads, seven additional States having from 2,000 to 5,000 miles of rural paving on the State Systems. Add to this eight additional States with paving from 1,000 to 2,000 miles, and you have a total of 18 States which have not less than 1,000 miles of State System paving within their borders.

Listing the type of road surfacing as “gravel or better,” we find that there are three State Systems which are 100 percent surfaced in length, whether they are in width or not. Eight more States are surfaced in like manner above 75 percent. Then 12 more States come along with a record above 50 percent, and so we have 23 State Systems—less than half—which are 50 percent surfaced with gravel or some higher type of construction. The entire State System mileage of the United States is less than 47 percent gravel or better.

When it comes to mileages of surfacing, with gravel or some superior quality, the record shows eight States each having more than 5,000 miles; in fact, two of these States exceed 10,000 miles each. Then 18 more States come tramping by with banners showing in excess of 2,000 miles. Bringing up the rear are five additional States with a record of over 1,000 miles; and so we have a list of 31 States in line, showing that each has surfaced with gravel or some better quality at least 1,000 miles.

There are eight States whose State Systems are not yet 50 percent graded and drained to standard. The unimproved mileage of these States represents over 38 percent of the entire unimproved mileage of all the State Systems. But when it is realized that these eight States compose more than 27 percent of the entire area of the United States, their problem can be much better appreciated.

Average Wealth and Expenditures Per Mile State System

The total wealth of the United States is placed by the Bureau of Census at something over 300 billion dollars. The total rural road mileage of the country is, in round numbers, three million miles. The total State Systems of roads are placed at 300,000 miles. Therefore, the State Systems are an average of 10 percent of the total rural road mileage and there is an average of \$1,000,000 in national wealth for every mile on the State Systems. But while the average State System is 10 percent of the entire total mileage, the averages throughout the country vary from 4½ percent to 36½ percent of the total road mileage in the individual States. The average expenditures last year per mile of the State Systems was \$2,089, but the range of expenditures ran from \$172 per mile to \$13,679 per mile.

Wealth and number of motor vehicles seem to go hand in hand. There are 17 States which have more than the average—72—motor vehicles per mile of the State System, and likewise there are 17 States which have more than \$1,000,000 of wealth per mile

of the State System. With one exception, these States are identical.

Taking into consideration the general average above referred to, a study of each State in relation to these general averages shows that there is but one State that may be considered the *average State*. That State is Maine. The only item in which it varies much from the general average is in expenditures per mile of the State System. Her expenditures were double that of the average—a vary laudable digression.

While the license fee and gas tax furnish over 75 percent of the total expenditures on the State Systems, this source of revenue cannot be depended upon to furnish all the funds needed in some States to construct and maintain the State Systems. When a State has 437 cars per mile of the State System it is on “Easy Street” for funds, in comparison to the State which has but 7 cars to the mile.

The necessary road mileage for a State System cannot be measured according to the wealth per mile of that State. While the 300,000 miles of State Systems have an average wealth of \$1,000,000 per mile, there are 31 States whose wealth per mile of State System is less than that amount. Some roads are of national importance, whether the States through which they pass have the wealth to construct them or not.

On the other hand, it would seem that if the Federal Government based legislation for the use of Federal funds on a system comprising 7 percent of the roads in a State that every State should have a least 7 percent of their roads on the State System. No State should congratulate itself on completing its job when the mileage of the State System is far below the average for the entire country.

What Should Road Expenditures Be?

Basing the average value of the registered motor vehicles for 1927 at \$420 apiece, as estimated by the Bureau of the Census, the wealth of the Nation invested in motor vehicles was \$9,713,472,000, or 3.2 percent of the entire national wealth. The total 1927 automotive expenditures, including new sales, as estimated by Moody's, of New York, was \$10,760,000,000, or an amount equal to 3.5 percent of the total national wealth, and therefore exceeds the entire estimated value of all motor vehicles, or 78 percent of motor expenditures exclusive of new sales.

The total expenditures for rural highways in 1926 is estimated at \$1,200,000,000, being an amount equal to four-tenths of 1 percent of the total national wealth.

The Bureau of the Budget has estimated the total national expenditures in 1926 at \$12,000,000,000, divided as follows:

Federal	\$3,900,000,000
State	1,500,000,000
All other city or local	6,600,000,000
Total	\$12,000,000,000

With the annual automotive expenditure for 1927 placed at \$10,760,000,000, it can readily be seen that our automotive expenditures that year was an amount equal to 89 percent of the total national, State, and local governmental expenditures.

The total road expenditures (outside of incorporated cities and national forests and parks) in 1926 were as follows:

Federal	\$77,586,266
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Another View from Wekiva River Bridge Between Sanford and Mt. Dora

State (exclusive of Federal Aid, included above)	501,396,901
County and township	*621,016,833
Total	\$1,200,000,000

*Estimated.

This shows that the Federal expenditures for roads were six-tenths of 1 percent of all governmental expenditures, the State expenditures 4.2 percent of all governmental expenditures, and the county and other local 5.2 percent of all governmental expenditures, or, in other words, the total expenditures on all highways (outside of cities, national forests and parks), was 10 percent of all governmental expenditures throughout the country.

Viewed from another standpoint, the Federal expenditures for roads were 1.9 percent of all Federal expenditures, the State expenditures for roads were 33 1/3 percent of all State expenditures, and the county and other local expenditures for roads were equal to 9.3 percent of the remaining expenditures in the States, or about 20 percent of all remaining expenditures outside of cities having a population of over 30,000.

Placing the highway rolling stock at \$9,713,472,000 and the automotive expenditures at \$10,760,000,000,

we have a grand total of \$20,473,472,000 tied up in highway transportation that year. We spent \$1,200,000,000 on roads to protect and make more useful the \$20,500,000,000 invested. Did we, as careful business men, spend enough? Was the amount expended properly distributed between the Federal, State and local governing bodies?

Needed Readjustments in Highway Financing

Since the great bulk of funds received for road building on the State Highway Systems come from motor license fees and a gasoline tax, a comparison of receipts among the States, grouping them according to *method* of determining the license fee and *rate* of gas tax, brings out some startling facts which ought to be the basis of some definite recommendations on the part of the State highway officials to their respective legislatures.

The Gas Tax

A little over 11 years ago the State of Oregon started something in highway financing when it established the gas tax. It began with a 1-cent tax, but the results have been so satisfactory that six States have a tax as high as 5 cents, and a 1-cent tax is no longer the rate in any State.

States which today get the highest total receipts per car, whether in the group charging 2 cents, 3 cents, 4 cents, or 5 cents, are all from the South, where the open weather conditions enable a constant use of the car.

But there is also a wide spread between the maximum and minimum receipts per car in all of the groups. Six States have a 5-cent tax, and there is a difference of \$7 per car between the maximum and minimum receipts. There are 12 States which have a 4-cent tax, and here there is a \$11 difference. Fifteen States which have a 3-cent tax, with a \$5 difference; and 11 States with a 2-cent tax, and yet their difference is \$4 per car.

Basing the average gas tax per car on a 1-cent basis of \$4.81 per car, it would be natural to presume that the average increase receipts would be according to the multiple used, but such is not the case. In but one case—the 4-cent rates—are the receipts equal to the supposed increase, and the most striking difference is in the 5-cent group, which shows but a little over \$1 increase per car over the 4-cent group. This naturally raises the question as to whether a 5-cent rate is not at the point where patronage is decreased.

Motor Vehicle License Fee

A comparison of the receipts from motor vehicle license fees throughout the country shows that among States using the same method or methods in determining how the fee shall be secured, there is no uniformity in schedule rates.

There are 14 States which use horsepower alone as the determining method, and yet the schedules of rates are so different that the maximum amount received per motor vehicle in this group is \$19.88, while the minimum is \$6.84—a difference of \$13.04 per vehicle.

Four States use horsepower and net weight as the factors, and their receipts vary from \$15.69 to \$6.67.

Two States use horsepower and gross weight. The schedule of one is 25 cents per horsepower and 25 cents per 100 pounds, while the other is 12½ cents per horsepower and 55 cents per 100 pounds. They enter the financial hopper at different rates of speed but one comes out at \$17.73 and the other at \$17.72.

Six States use gross weight only, and the treasury is helped \$19.94 per car in one State, and the least must be satisfied with \$8.91.

A dozen States use net weight only, and they range from \$8.90 to \$26.68.

Two use a flat rate and get the same income, \$5.65 per car.

Just to be different, seven States have each a method all their own. One uses value in pounds net weight; one, value; one, cost price; one, cubic-inch displacement; one, manufacturers' list price; one, net weight horsepower and times registered; and, finally, one uses a combination of factory price, net weight, horsepower and times registered; and yet after all this trouble the amount received, per car, is only \$8.29.

A comparison of methods used shows that the final result is very much the same when it comes to the average cash received by each group. The way some of the schedules are "fearfully and wonderfully made" would seem to justify the conclusion that simplicity in method and schedule used is greatly to be desired. It ought to be considered reasonable to presume that each State should have a minimum rate, and the vast majority of them do, but why should this minimum rate vary from \$4 to \$15.

Now that the theory of a gas tax is seemingly well entrenched as a justifiable method of securing funds for road building, and the rate is being gradually increased, there is a disposition in some localities to curtail or almost entirely eliminate the auto license fee. It might be well for these people to realize that the gas tax can reach a point where the increase will not be productive of increased total receipts, and the States of the northern part of the country should realize that a license fee is a fixed amount, without regard to climatic conditions.

That there is justice in the argument that with the retention of the motor license and gas tax the motor vehicle should be exempted from personal property taxation has been accepted by 13 States. This is a matter that should receive serious consideration by all the States. While there may be a few cars which, for a time, escape the license fee, none can escape the gas tax. It is a notorious fact, however, that the property tax, to use polite language, is very unequally administered, and in many instances is entirely ignored. Entire elimination of the property tax, which in most cases does not go for road purposes anyway, should be recommended to the States which have not already abandoned this plan of taxation.

Use of Federal Funds Off the State Systems

At various times during the first session of the present Congress bills were introduced having for their object the securing of Federal funds to aid in the improvement of roads outside of the present Federal Aid System. Arguments for these appropriations centered about the mileage of rural roads over which mail is being delivered daily by the Post Office Department. The following contentions were made before the congressional committee in hearings covering this subject:

1. The system of roads, to which Federal funds are now limited, is nearly completed.

2. The main object in expending Federal funds for roads is to expedite the delivery of rural mail, and the rural mail system is neglected for the benefit of the State Systems.

3. Highways are not improved rapidly enough to bring relief to the farming communities, and Federal funds should be given for local roads.

Having had 13 years experience as a postmaster, and that at a period when rural mail delivery was being established, I believe I have some appreciation of the problems confronting the rural carriers and the people who receive this service. However, there is woeful misunderstanding as to the completion of the State System of roads as well as to the amount of improvements on the remaining public highways over which mail is being carried.

As already stated, there are but two small States which have their State Systems over 75 percent paved and but five more States over 50 percent paved. There are but 23 States whose State Systems are over 50 percent surfaced with gravel or some other higher type of surfacing.

It is fair to presume that most of the State Systems are on the Rural Free Delivery System and that most of the local roads improved are on this same system, for no one would wish to accuse the county officials with giving first preference in road improvements to roads that were not used for delivery of mail. With this assumption as a basis, a close study, by States, of the condition of road improvements shows that there are 387,005 miles of surfaced roads outside of the State Systems, while there are 162,039 miles of surfaced roads on the State Systems—more than twice as many miles of surfaced roads outside the State Systems than on State Systems. This is a conclusive answer to the contention that the State Systems are being improved to the detriment of the remaining roads. Uncle Sam uses 1,270,539 miles every day in the delivery of rural mail. Counting the miles of road improved to standard by grading and draining, as well as those that are surfaced, we find that there are on both the State and local systems 1,184,049 miles ready for his use—a mileage almost as great as that of the entire R. F. D. system. There are 23 States which have a larger improved rural mileage than is on the total R. F. D. system in those States, and 30 States have a larger surfaced mileage of local roads than surfaced mileage of State roads.

Evidently the State legislatures have not overlooked the R. F. D. roads, for last year they gave the rural roads outside of the State Systems \$115,912,605 from the monies received from motor licenses and gas tax alone, and almost \$30,000,000 more by direct appropriations.

There are five States which have a larger State System mileage than R. F. D. mileage, and in 18 other States the State System ranges from 25 to 75 percent of the R. F. D. mileage, all this despite the fact that the total State Systems in the country are but one-fourth the total R. F. D. system.

Business institutions naturally give the greatest consideration to those who give the greatest financial support. The Federal Government is presumed to get its support to meet the expenses of conducting the rural delivery mail system from those who patronize this service; and, therefore, the routes having the largest number of families per mile living on those routes would naturally be supposed to bring in the largest financial returns. But there are so many elements considered in justification of giving this mail service to the rural patron or the urban patron who wishes to reach the rural patron that the number of pieces of mail handled, which represent the amount

of postage stamps purchased, is but one of the elements involved. Time will not permit a full discussion of this subject, but one illustration should be given to show the involved situation and the fact that mail communication is a national obligation.

In the State of Connecticut there were handled last year 8,091 pieces of mail for each mile of the R. F. D. system, being the largest amount handled in any State in the Union. There are eight families to each mile of the free delivery system in that State. Therefore, for each working day during the year, 307, the rural carrier handles three pieces of mail for each family in Connecticut. In North Dakota there was handled the least amount of mail per mile of the R. F. D. system of any State; namely, 2,170 pieces. There are but two families in North Dakota per mile of the R. F. D. system. Therefore, the number of pieces of mail handled in North Dakota per family per year is the same as that in Connecticut—three pieces a day. However, the rural carriers in North Dakota must travel 20,000 miles more every working day to deliver the same amount of mail per family as in Connecticut, for the R. F. D. mileage in Connecticut is 6,632 and in North Dakota it is 26,659. But the citizen in Connecticut wants to hear from the citizen in North Dakota on equal terms, and so the whole cost is equalized by Federal operation—not the least element of which is an improved highway transportation that makes such service possible.

The contention of those who are asking the Federal Government to make additional appropriations for secondary roads exclusive of those on the State Systems is hardly appropriate at this time, despite their very laudable anxiety to get, more rapidly, a larger mileage of improved highways. This is true not only because the ratio of improvement between the primary and secondary roads, so called, is not adverse to the secondary roads, but it should also be borne in mind that the State Systems are not as yet 50 per cent surfaced, and admittedly the bulk of the highway traffic is limited to the State Systems. The States are constructing a larger mileage of roads on the Federal Aid System without Federal funds than are being constructed with Federal funds, so it is quite evident that road building is not being retarded to keep step with the limited Federal appropriations. In building this large mileage of roads without Federal aid, the States have financed this construction to the extent of at least \$500,000,000 that was the rightful obligation of the Federal Government.

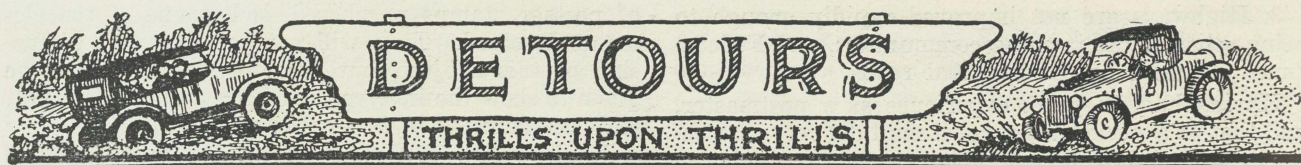
There are millions of people who believe that the Federal Government should make a larger appropriation for highways than is now in the budget, but in view of the status of road building as it now exists, any additional Federal funds which the Congress may deem wise to appropriate should be applied *first* to the surfacing of the Federal Aid System, which was authorized by the Congress itself.

Enlarged Building Program in Sight

Recently in St. Louis President-elect Hoover, in a public address, said:

"There are three potential fields in which the principles and impulses of our American system require that government take constructive action. They comprise those activities which no local com-

(Turn to page 23.)



Dream of the Condemned

Daughter: "He says he thinks I'm the nicest girl in town. Shall I ask him to call?"

Mother: "No, dear, let him keep on thinking so."
—Belle Hop.

Too Fresh

Mistress: "Haven't we always treated you like one of the family?"

Maid: "Yes, and I'm not going to stand it any more."—Bison

Towering Intellect

Prof: "In which of his battles was Alexander the Great killed?"

Frosh: "I think it was his last."—Lyre.

Long Ride Ahead

Cop: "Pull up to the curb."

Motorist: "Yes, sir; where's the nearest vacant one?"

In Finland they call bootleg liquor korpikunsen kyyneleita even before drinking it.—New York Evening Post.

A Real Shock

"Yes," said the old man, "I have had some terrible disappointments, but none stand out over the years like the one that came to me when I was a boy."

"Some terrible shock that fixed itself indelibly in your memory, I suppose?"

"Exactly," said the old man. "When I was a boy I crawled under a tent to see the circus, and I discovered that it was a revival meeting."

A World's Wonder

"Bob told me I was the eighth wonder of the world."

"What did you say?"

"Told him not to let me catch him with any of the other seven."

"Harold is awfully obstinate."

"In what way?"

"It's the hardest thing in the world to make him admit I'm right when he knows I'm wrong."—Tit-Bits.

Too True

"Lucky is the girl," says a writer, "who marries a man with money to burn. She makes a good match."

He Chooses Chow

"Where's your car?"

"I turned it in as a first payment on a turkey."—Cincinnati Inquirer.

Liberal Banker

Two Louisville darkies were discussing their banker.

"Dey say he's kindah tight," said one.

"Tight, nothing!" said the other. "Dat man's as lib'l as dey makes 'em. He loaned me five dollahs two yeahs ago an' he ain' nevah ast for' it yit. Eb'ry Sat'day I goes 'round an' pays him two bits intrust, and he says foh me not to worry 'bout dat principal. No-suh, dat banker shuh am white."

A garlic sandwich is two pieces of bread traveling in bad company.—Denison Flamingo.

He: "Nice young girls shouldn't hold a man's hand."

She: "Oh yes, nowadays a nice girl has to hold a man's hand."—Rice Bowl.

Uncle Tom: "Lawdy, am that the hounds I hears?"

Liza: "Sakes no, child. Dat am just a bay tree."
—Brown Jug.

He (enthusiastically): "Would you like to go to the opera next week and then to the Ritz for dinner?"

She (rapturously): "I would be delighted!"

He: "Then go ahead."—Georgia Cracker.

Captain of liner (to fellow in outboard motorboat): "Look out where you're going. You almost rammed us."—Brown Jug.

"Do you like housework?"

"I like nothing better."—Denison Flamingo.

Two Non-Choosers.

Nineteen twenty-eight will be remembered by history as the year of the voluntary retirement of Messrs. Coolidge and Tunney.—The New Yorker.

Dunning Her Dad

Father: "Young man, I understand you have made advances to my daughter."

Young man: "Yes. I wasn't going to say anything about it, but since you have mentioned it, I wish you would get her to pay me back."—United Churchman.

No Overhead

Fizz: "They have no piano, no summer home, no fur coats, no victrola, no washing-machine, no automobiles, no radio——"

Fuzz: "Gee, they must have money."—Life.

"Are you the trained nurse mama said was coming?"

"Yes, dear, I am the trained nurse."

"All right, let's see you do some of your tricks."
—Lafayette Lyre.

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SOME OBSERVATIONS

(Continued from page 21.)

munty can itself assume and which the individual initiative and enterprise of our people cannot wholly compass. They comprise leadership of the Government to solve many difficult problems.

"The first of these fields includes the great undertakings in public works, such as inland waterways, flood control, reclamation, highways, and public buildings. * * *

"This administration has recognized the public necessity of Federal Government contribution to the creation of a definite system of modern interstate highways. This program is far from completion, and I stand for its continuance. Congress has lately authorized a large program of much-needed public buildings. And there are other important public works of less immediate interest to the Midwest to which I have referred upon other occasions. The whole comprises the largest engineering construction ever undertaken by any government. It means an expenditure of nearly a billion dollars in the next four years, or nearly four times the outlay on the Panama Canal. As I have said before, these undertakings are justified by the growth, the need, and the wealth of our country."

In view of this pronouncement and the probabilities of an extra session of the new Congress early in March, we should make a request for \$25,000,000 additional to the \$75,000,000 already authorized for each of the years 1930 and 1931 in the regular Federal Aid road program, and increase in the present forest authorization and an additional appropriation to build roads through unappropriated public lands and Indian reservations.

Conditions justify all these requests. If the Federal Government is going to spend \$1,000,000,000 during the next four years on the enterprises referred to by Mr. Hoover, the present allotment for highways is far below the apportionment which interstate highway transportation demands.—American Highways.

Why They Were Late

Traveler (in Arizona): "Conductor, why is this train so late?"

Conductor—"Well, you see, sir, at night it gets so cold that the fireman can't keep up steam in the engine, and in the daytime it gets so hot that the rails expand and push the towns farther apart."



On most jobs SLAG costs less in the road

Every year more than a MILLION sq. yds. of hard surface roads and streets are laid with basic slag. Doesn't that prove, on the face of it, that the cost of

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competes fairly with other standard road metals? On most jobs "Slag costs less in the road" (from 10% to 25% less) for slag weighs from 300 to 600 lbs. less per cu. yd. than other standard road metals.

BIRMINGHAM SLAG CO.

Slag Headquarters for the South

Atlanta	Birmingham	Jacksonville
Thomasville	Montgomery	Ocala, Fla.

Status of Construction

THROUGH OCTOBER 31ST, 1928

Proj. No.	Contractor	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Type	Per Cent Complete
53-C	Manly Const. Co.	2	Lake	2.85			0.00	0.00	Bit. Conc.	17.00
55	W. J. Bryson Pav. Co.	14	Alachua	16.77	16.77	16.77			Graded	100.00
56	Nelson Bros.	10	Leon	17.98				1.44	Concrete	7.90
61-A	M. C. Winterburn, Inc.	1	Gadsden	10.00				10.00	Concrete	100.00
61-C	Morgan-Hill Paving Co.	1	Gadsden	9.77				9.77	Concrete	100.00
62-A	A. D. Weeks	24	Osceola	12.52	11.27	11.27			Graded	82.00
62-C	Everglades Const. Co.	24	Osceola	11.83	11.83	8.99			Graded	85.00
62-D	A. D. Weeks	24	Osceola	12.62	12.62	10.73			Graded	90.00
500-B	State Convict Forces	20	Bay	12.76	11.12	11.12			Graded	75.00
644-A	State Convict Forces	10	Wakulla	8.50			8.50	4.50	S.T.R.B.	85.00
669-C	R. C. Huffman Const. Co.	27	Dade	12.00	12.00	12.00	12.00	0.00	S.T.R.B.	98.00
669-D	R. C. Huffman Const. Co.	27	Dade	12.31	12.31	12.31	12.31	0.00	S.T.R.B.	98.00
669-V	H. E. Wolfe	27	Collier	19.72	19.72	19.72	19.72	0.00	S.T.R.B.	90.00
677-D	Duval Engr. & Contr. Co.	13	Levy	8.91			8.91	6.95	S.T.R.B.	95.00
683-A	Robert G. Lassiter Co.	4	Palm Beach	8.04	8.04	8.04		8.04	Concrete	100.00
685	Pararo Const. Co. and State Forces	10	Franklin	18.46			3.48	0.00	S.T.R.B.	16.00
687-B	Wm. P. McDonald Const. Co.	2	Lake	15.22			7.00	0.00	S.T.R.B.	38.00
688	State Convict Forces	10	Bay	9.32	7.92	7.92			Graded	75.00
707	Leon County Forces	43	Leon	5.31	3.00	1.50			Graded	15.00
719	Broadbent Const. Co.	5-A	Suwannee	8.57			6.00	0.00	S.T.R.B.	47.00
720	Hardee-Fisher Co., Inc.	11	Jefferson	9.64	9.64	9.35			Graded	95.00
722	R. J. Carroll	48	Jefferson	8.83	8.83	5.06			Graded	69.00
724	Leon County Forces	66	Leon	11.10	10.32	9.99			Graded	88.00
726	State Convict Forces	19	Dixie	12.57	8.83	8.46			Graded	50.00
728	State Convict Forces	10	Leon	11.65	11.18	11.18			Graded	96.70
736	C. G. Kershaw Const. Co.	39	Holmes	8.58	8.58	7.36			Graded	85.00
740	Baker & Lewis and State Forces	10	Gulf	9.36			7.70	2.41	S.T.R.B.	65.00
744	State Convict Forces	19	Madison	5.79	5.79	5.38			Graded	93.00
745	State Convict Forces	19	Taylor	15.95	15.13	14.09			Graded	85.00
748	State Convict Forces	35	Madison	6.22	6.22	6.22			Graded	100.00
749	State Convict Forces	14	Gilchrist	7.81	7.42	4.61			Graded	64.00
750	State Convict Forces	14	Gilchrist	12.97	7.65	3.50			Graded	37.00
764	Duval Engr. & Contr. Co.	50	Suwannee	12.00			1.92	0.00	S.T.R.B.	11.52
767	State Convict Forces	39	Bay	5.27	0.00	0.00			Graded	0.00
780	C. F. Walker	29	Okeechobee	11.00	11.00	10.45			Graded	96.00
781	C. F. Walker	29	Okeechobee	11.00	11.00	10.45			Graded	86.00
782	C. F. Walker	29	Okeechobee	6.62	6.62	6.49			Graded	90.00
798	State Convict Forces	13	Nassau	15.03	6.50	1.25			Graded	9.00
802-A	C. C. Hayes	10	Okaloosa	8.68	6.77	.95			Graded	13.40
802-C	Curry & Turner	10	Okaloosa	10.24	0.00	0.00			Graded	0.00
803	Collins Const. Co.	10	Okaloosa	11.13	4.45	0.00			Graded	4.00
804	C. A. Steed & Sons, Inc.	67	Glades	18.56	18.56	15.78	10.21	0.00	S.T.R.B.	57.00
807-A	R. C. Huffman Const. Co.	25	Palm Beach	10.82	10.82	9.65	7.41		S.T.R.B.	70.00
807-C	R. C. Huffman Const. Co.	25	Palm Beach	6.14	4.45	3.40	2.00	0.00	S.T.R.B.	35.00
815	Silas Gibson	54	Okaloosa	13.58	13.20	9.28			Graded	70.00
819	W. J. Bryson Pav. Co.	54	Okaloosa	4.44	4.44	4.44			Graded	100.00
823	W. J. Bryson Pav. Co.	41	Okaloosa	9.18	8.72	8.08			Graded	94.00
824	W. J. Bryson Pav. Co.	41	Okaloosa	9.82	9.33	6.87			Graded	76.00
827	S. G. Collier		Escambia	8.12	8.10	6.40			Graded	81.00
844-C	State Convict Forces	115	Okaloosa	5.63	0.00	0.00			Graded	0.00
Total complete October 31st, 1928				2,774.70	2,725.59	1,269.03	1,959.28			
Complete month of October				11.02	23.41	23.03	3.56			
Total complete to Sept. 30th, 1928				2,763.68	2,702.18	1,246.00	1,955.72			

TOTAL MILEAGE COMPLETE

	Concrete	Brick	B. C.	S. A.	B. M.	Asph. Block	S.T.R.B.	S.T.S.C.	S. C.	Marl	Total
Total complete to Sept. 30, 1928	270.79	17.13	36.46	112.94	109.70	23.20	963.22	174.09	257.04	27.58	1,992.15
Complete month of October	2.41				.22		15.55				18.18
Complete to Oct. 31, 1928	273.20	17.13	36.46	112.94	109.72	23.20	978.77	174.09	257.04	27.58	2,010.33

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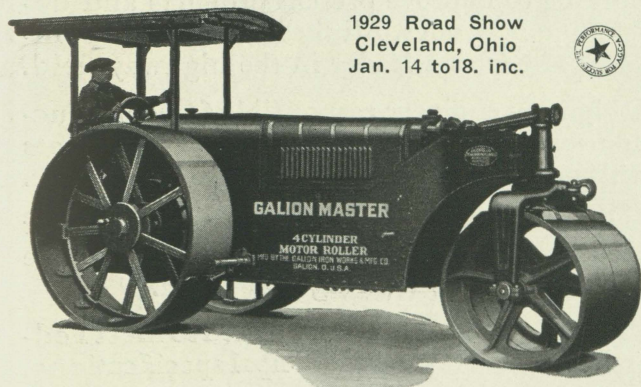
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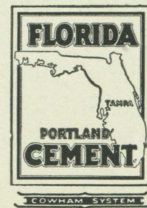


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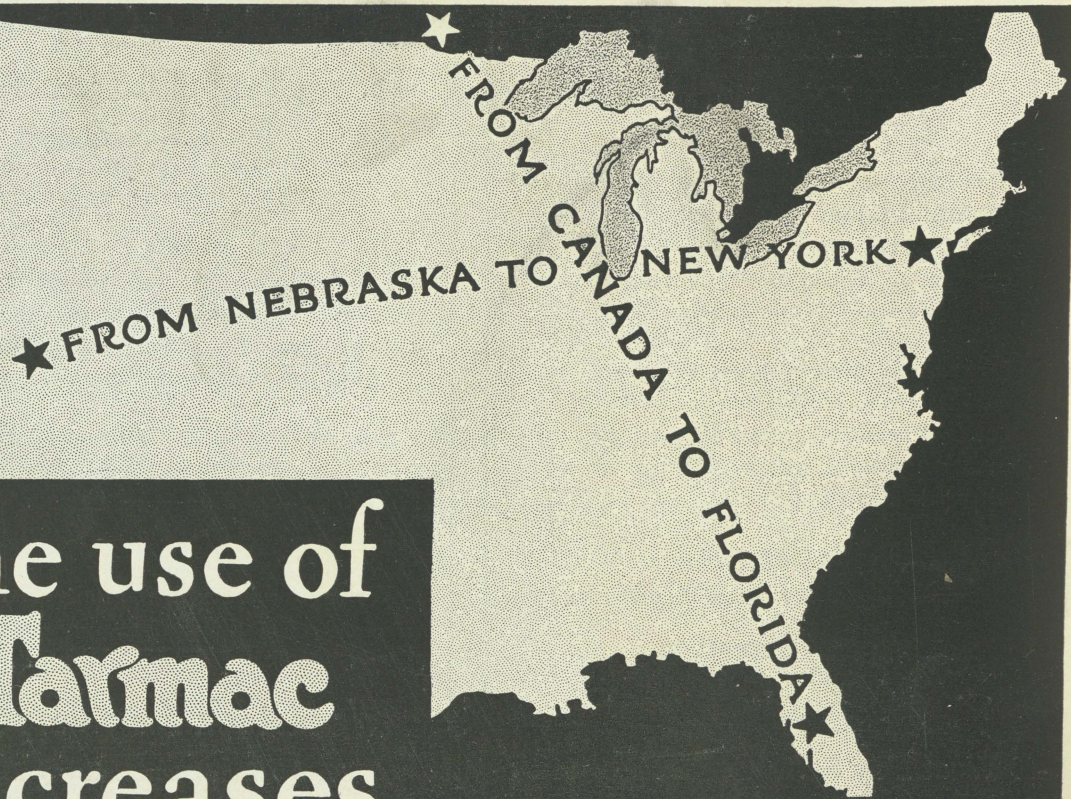


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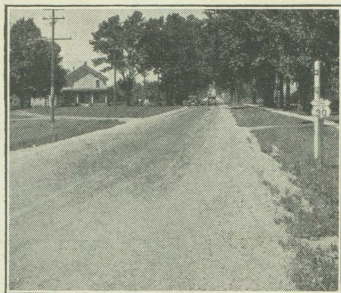
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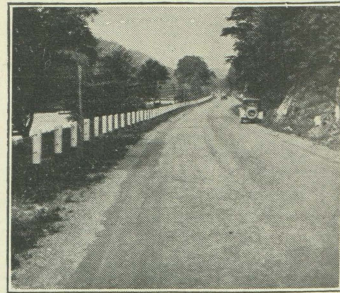
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